MAY 25, 1953

NEWS ISSUE

Electrical World

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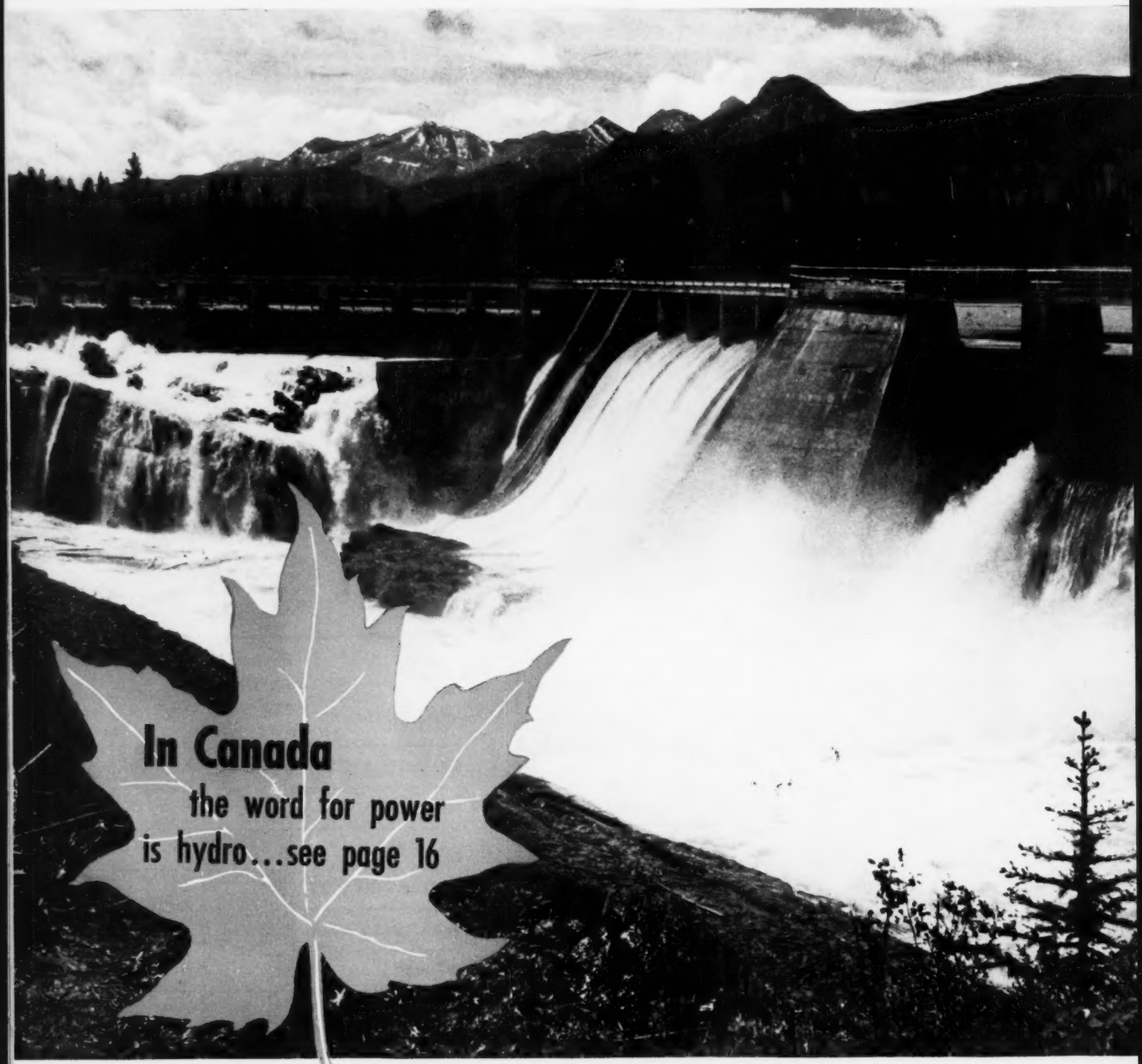


Seeke Dam on the Bow River in Alberta

At Montana Power the Employees Are Taking Stock . . . Page 20

It's Easier to Get Copper, Aluminum . . . Page 50

Record G-E expansion geared to peace economy, G-E Share Owners told

Upward trend seen in electrical manufacturing

"Any promises of peace in Korea and throughout the world should be wholeheartedly welcomed. Industry has a big and growing job to do, even if we are fortunate to arrive at a point where our defense job can be cut back," G-E President Ralph J. Cordiner told a gathering of 2,200 General Electric Share Owners last month.

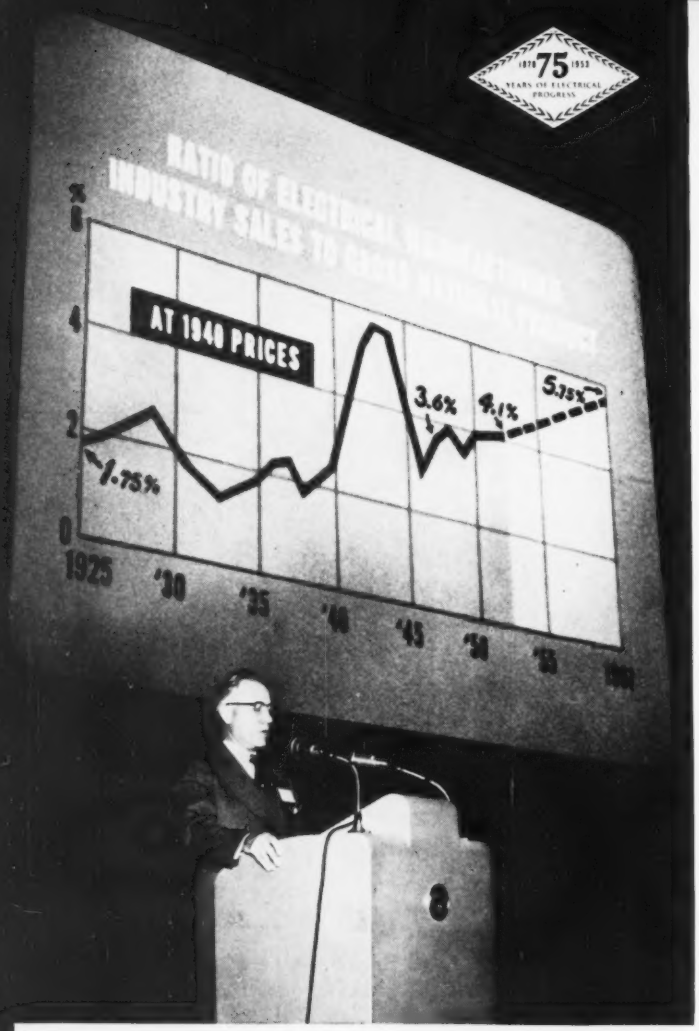
Pointing to the need for continued expansion, Mr. Cordiner emphasized that General Electric's program of spending approximately 732 million dollars for the years 1951 through 1955 is based fundamentally on meeting the requirements of a growing civilian economy.

Economists predict a growth in the Gross National Product from 346 billion dollars in 1952 to 410 billion dollars by 1961, he said. Records show that an increasing percentage of this national output of goods and services will be represented by electrical manufactures.

Significantly, a large part of the new facilities being provided by General Electric is devoted to equipment required by electric utilities. Opportunities for expansion in both electrical manufacturing and electric power development go hand in hand. General Electric Co., Schenectady 5, New York. 301-236

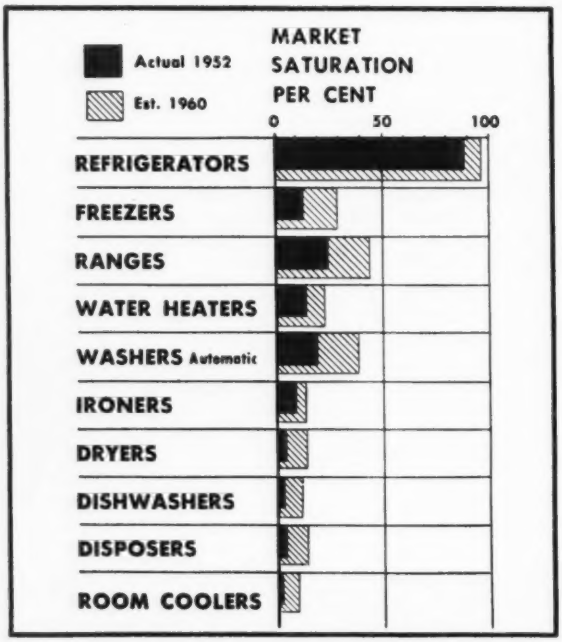
MORE POWER TO AMERICA

GENERAL ELECTRIC



Reasons for confidence in the future of the electrical industry were given by Mr. Cordiner with the help of the graph shown projected on a screen above. It illustrates the rising percentage of products of the electrical manufacturing industry represented in the country's total output of goods and services. From 1.75 percent in 1925, this has grown to 4.1 percent in 1953. G-E predicts a rise to 5.75 percent in 1961. "We believe the electrical industry will grow more than twice as fast as the remainder of the economy during 1953 to 1961," said Mr. Cordiner.

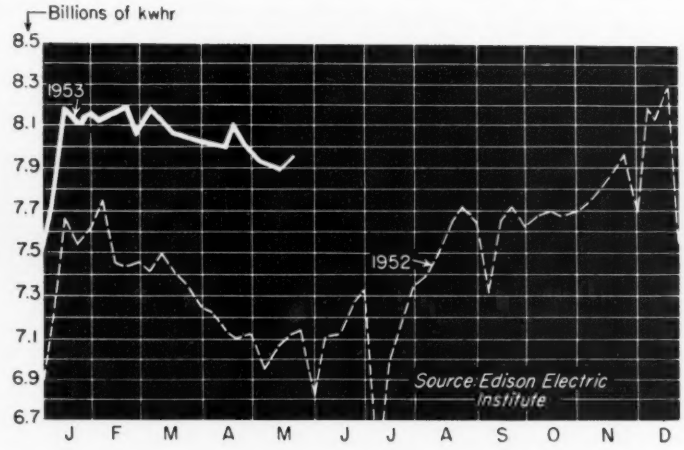
Dramatic example of G-E expansion is this photo of Appliance Park, giant new manufacturing plant for major appliances at Louisville, Ky. The need for increased manufacturing facilities is demonstrated in the chart at right, showing the present market saturation for appliances and the estimated position in 1960.



VOLUME 139, NO. 21

May 25, 1953

Electrical World



Output Week Ended May 16—7,959,054,000 Kwhr

Per Cent Change From Previous Year

	Total US	New Eng.	Mid. Atlan.	Cent. Ind.	West Cent.	South-east	South Cent.	Rocky Mount.	Pacific NW	Pacific SW
May 16	+11.9	+11.5	+8.6	+10.2	+11.1	+17.9	+13.0	+11.8	+13.2	+11.0
May 9	+12.2	+13.3	+10.4	+12.2**	+12.4	+18.7**	+4.7	+12.5	+9.0	+10.3
May 2	+14.2	+13.9	+9.3	+19.1	+14.1	+16.6	+9.7	+16.8	+10.7	+12.2

Electric Power Statistics

		Latest Month	Preceding Month	Year Ago
Peak Load (Million Kw)	Mar.	73.5	73.3	67.1
Capacity (Million Kw)	Mar.	83.17	82.83	76.34
Production (Billion Kwhr)	Mar.	36.97	33.60	33.04
Hydro		10.20	8.99	10.44
Fuel		26.77	24.60	22.60
Fuel Consumption				
Coal (Million Tons)	Mar.	9.44	9.16	8.84
Oil (Million Barrels)		8.08	6.81	5.22
Gas (Billion Cu Ft)		70.16	57.82	57.39
Sales (Billion Kwhr)	Feb.	31.21	32.07	29.08
Residential		9.31	9.82	8.51
Commercial		5.17	5.37	4.87
Industrial		14.76	14.90	13.82
Other		1.96	1.97	1.88
Net Income Class A & B Companies ($ Million)	Feb.	98.39	98.55	88.41
Estimated Dec. '53 Peak (Million Kw)	Feb.	86.5	87.0	89.1
Kwhr per Residential Customer (12 Month Average)	Feb.	2,195	2,183	2,037
Revenue per Kwhr Residential Service.. (12 Month Average)	Feb.	2.76¢	2.77¢	2.80¢
Canadian Production (Billion Kwhr)	Mar.	5.78	5.26	5.22

Business Statistics

FRB Industrial Production Index†††	Mar.	239*	236	217
Gross National Product Annual Rate ($ Billion)	4th Qtr.	355.2*	343.0	337.1
E. W. 5 Industry Production Index	Mar.	129.8*	129.0**	123.8
ENR Construction Cost Index††	Apr.	123.6	123.2	116.2
BLS Consumer Price Index	Mar.	188.8	188.6	188.0
NEMA Insulation Materials Sales Index†	Mar.	694	649	536
NEMA Electric Appliance Sales Index†		356	306	278
NEMA Household Refrig. Sales Index†		211	208	163

* Preliminary ** Revised † 1936=100 †† 1949=100 ††† Unadjusted

THIS WEEK

The Electrical Week 5
In the Industry 10
Technical Notes 10
Sales and Service 34
Industrial Relations 36
News About People 40
Financial 44
Manufacturers and Markets 46
Electrical Business Outlook 50

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A Purchasing Agent for a Utility ASKS—

"Is it possible to determine by visual inspection whether or not an insulator is okay?"

NO. 12 IN A SERIES

HERE'S OUR ANSWER

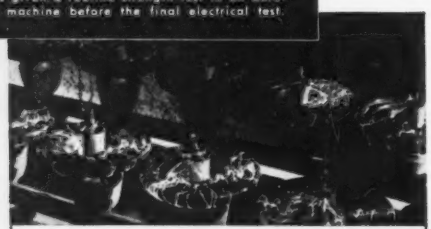
Absolutely Not! Visual inspection alone cannot determine whether an insulator is fit for electrical service. Visual inspection does play an important part in the manufacture of Pinco Insulators in determining dimensional accuracy and physical appearance. However, it is necessary to subject *every* insulator to routine electrical and mechanical tests to be absolutely certain that the insulators we ship will more than meet the electrical and mechanical loads they will be subjected to in service.

It is because of Pinco's strict adherence to quality and production control methods *plus* rugged mechanical and electrical tests that Pinco Insulators have given top performance for more than 30 years.

That's why we say—*it pays to put up Pinco!* They're RIGHT *for* the job . . . always RIGHT *on* the job!

P.S. *Like further proof of Pinco's service records covering all types of Insulators? Drop us a line . . . or ask your Joslyn salesman.*

STRENGTH TEST . . . After Assembly, each Pinco unit is given a routine strength test in an automatic machine before the final electrical test.



60 CYCLE FLASHOVER TEST . . . These Pinco 1060 Suspension Units must stand up under maximum flashover voltage for 5 minutes to prove they can perform 100% under unusual electrical line surges.

EVERY PINCO INSULATOR MUST PASS THESE GRUELLING TESTS OR BE REJECTED . . .

HIGH FREQUENCY FLASHOVER TEST . . . These Pinco 1510 Suspension Insulators are being subjected to a high frequency flashover test. Electrical performance of all Pinco Insulators is insured by tests such as this.

160,000 VOLTS are applied to these Pinco 735 Switch and Bus Units in the final 60 cycle test. Each part of this insulator has also been tested electrically before assembly.

In addition to these routine mechanical and electrical tests, Pinco Insulators selected at random are subjected to the standard E.E.I. Nema design tests. It is precise quality and production control methods such as these, from clay to finished product, which insure Pinco "RIGHT ON THE JOB" service . . . points well worth remembering when you specify and purchase insulators.

PINCO INSULATORS

RIGHT ON THE JOB—

The Porcelain Insulator Corporation LIMA, N. Y.

Suspension Insulators . . . Clamps and Fittings . . . Switch and Bus Insulators . . . Distribution and High Voltage Pin Types . . . Guy and Tree Insulators . . . Special Porcelain.

THE ELECTRICAL WEEK

The Issue's News Highlights—American Gas & Electric announces plans to build a 4,500 psi generating unit in cooperation with General Electric and Babcock & Wilcox . . . Congressional hearings begin on conflicting plans for the development of additional power from the Niagara River.

Jerome Kuykendall is named chairman of Federal Power Commission . . . Five divisions are eliminated at Interior Department to straighten the lines of command . . . Secretary of Interior Douglas McKay reassures APPA that "public power is here and is going to stay."

Steel industry is becoming more aware of the market provided by pipe-type cable. One order alone, placed recently by Duquesne Light to bring lines to downtown Pittsburgh substation, amounted to 1,000 tons.

Miamisburg, Ohio, City Council approves sale of its municipal power plant to Dayton P&L . . . Arlington, Ohio, Board of Public Affairs plans to sell its generating plant and distribution system. Ohio Power has bid $141,780 and Hancock-Wood Electric Cooperative $95,000 . . . Richmond, Ind., City Council plans to sell $6 million in electric utility revenue bonds . . . Pennsylvania P&L will pay July 1 a quarterly common dividend of 50¢ a share, compared with 40¢ a share previously.

Oregon Public Utilities Commissioner Charles H. Heltzel sets May 26 to hear complaints against Portland GE, Pacific P&L, and Mountain States Power involved in billing surcharges for extra steam cost generation required during last winter's hydro shortage.

Consolidated Edison's Pres Roy Searing tells annual stockholders meeting that possibility of a Con Ed-Long Island Lighting merger is not being considered "at the present time."

Kittery, Me., Electric Light cuts rate per kwhr for all above 150 kwhr per month from 3¢ to 2.6¢ . . . California-Oregon Power asks California and Oregon PUCs for a $2.4 million rate hike which will raise the rate of return from 3.68% to 6.33% . . . New Jersey P&L gets New Jersey Board of Public Utility Commissioners approval to raise rates $991,000 a year against $1.4 million requested. Rates will become effective June 1.

Hanover, N. H., replaces 6,000-lumen street lights in the downtown area with 10,000-lumen units with downward refractors. Further expansion is planned . . . TV sets are exempted from personal property tax in Massachusetts through inclusion in household furniture bracket by a law signed by Governor Herter . . . South Boston, Mass., is establishing a program for replacing gas street lamps with electric units served by Boston Edison.

Atomic Industrial Forum, Inc, formed in April as the first nuclear industry association, has elected as its first president Walker L. Cisler, president of the Detroit Edison Co. Cisler was instrumental in setting up this organization.

Off the Washington Wire—Continuing fund for the Southwestern Power Administration is subject of one of the hottest battles being waged over federal appropriations for power purposes. House voted to delete the $3 million item from the Eisenhower budget at the urging of electric companies in the area. Public power advocates are now waging an all-out battle to get the Senate to restore it . . . President Eisenhower has been invited to dedication of the Philpott hydro project in Virginia in July. He hasn't made up his mind whether to accept.

Senate Appropriation subcommittee is conducting a thorough study on feasibility of the Georgia Power Co proposal for delivery of government-produced power to preference customers. The contract is now before Interior Secretary Douglas McKay for a decision.

TVA area power users have begun a letter-writing campaign asking Congress to restore the $61 million sliced from TVA power budget by the Eisenhower Administration. Appropriations Committee members in the House report they are getting a considerable number of letters and telegrams from valley residents, but thus far the reaction hasn't been as great as over the proposed removal of TVA headquarters from Tennessee to Alabama.

Bureau of Reclamation recommends construction of $51.2-million Wagon Wheel Gap dam and power plant on Rio Grande River in Mineral County, Colo. . . . Revised budget estimates for AEC probably will slow development of commercial electric power from the atom. AEC's original budget for fiscal year starting next July 1, which was prepared by Truman Administration, has been slashed by some $480 million by President Eisenhower's budget makers. Details of the cut still are not available.

Congratulations—New Pacific G&E appointments, to become effective July 1, include Dunlap D. Smalley, former vice president of operations, appointed vice president and assistant general manager; George H. Hagar promoted from manager of electric operations to vice president of operations; Arthur J. Swank, manager of general construction, who will become vice president of general construction; and Robert H. Gerdes, general counsel, named vice president and general counsel.

Georgia Power promotes Vice President and Comptroller H. W. Boozer to the newly created post of vice president in charge of finance . . . J. H. Pengilly, vice president of Square D Co, is elected president of Pacific Coast Electrical Association for 1953-54 term.

George A. Donald, president and general manager of Lake Superior District Power, is elected president of Wisconsin Utilities Association . . . Illinois Power elects Max A. Faucett vice president. He resigned as professor of electrical engineering at University of Illi-

(Continued on page 10)

AG&E Plans 4,500 Psi Generating Unit

● New boiler and turbo-generator will cross "critical pressure" barrier for first time in commercial power output

● Unit is slated for installation at Ohio Power Co's Philo Plant. Project will cost more than $12 million

● Sporn declares still higher pressures and temperatures will be made possible as result of the current development

A new boiler and turbo-generating unit designed to cross the barrier of the "critical pressure" of steam for the first time in the commercial production of electric power was announced last week. It will be the most efficient generating unit ever built and will utilize the unprecedented steam pressure and temperature of 4,500 psi and 1,150 F, respectively.

Announcement of plans to build the unit was made by Philip Sporn, president, American Gas & Electric Co; Alfred Iddles, president, Babcock & Wilcox Co; and Glenn B. Warren, vice president of General Electric Co and general manager of its turbine division.

3 Companies Cooperate

After many months of study and preliminary design, the three companies have just reached agreements under which General Electric will design and manufacture a 120,000-kw turbine and Babcock & Wilcox will design and build the boiler for it. The turbine, at 4,500 psi, will operate at almost double the present highest steam pressure utilized for power generation. The initial steam temperature of 1,150 F will be 50 deg above the present highest and will be followed by two stages of reheat, the first at 1,050 F and the second at 1,000 F. The boiler will be the "once-through," universal-pressure type, in which water at 5,500 psi is pumped through and changed into superheated steam in a single fast passage through the tubes in the boiler. It will be equipped with the revolutionary cyclone furnaces to insure the rapid and complete burning of the coal and prevent air pollution.

The entire project, cost of which will exceed $12-million, is being engineered by American Gas & Electric Service Corp, a subsidiary of American G&E. The new unit will be installed at Ohio Power Co's Philo Plant near Zanesville, Ohio. Ohio Power is an AG&E operating company subsidiary.

In commenting on the project on behalf of the three companies associated with it, Sporn pointed out that it was the consummation of more than 30 years of continuous work and development on the AG&E system to bring about more economical methods of power generation and that the three companies have cooperated during the past three decades on a large number of other projects looking toward the same objective.

New Ideas in Design

"Many new ideas in turbine, boiler, and plant design will be incorporated and tested in this development," Sporn stated. Among these are the use of: (1) steam pressure above the "critical pressure" of 3,206 psi, (2) initial steam temperature of 1,150 F, and (3) more than one stage of reheat.

"While the use of boilers above the critical pressure of 3,206 lb had been considered before and while laboratory pressures above that value had been utilized," Sporn said, "no practical design had ever been developed." He explained that, in the super-critical pressure range, water passes immediately into steam, without any intermediate stage of "bubbling," such as exists in a boiler operating at any pressure below 3,206. The use of this universal-pressure type boiler means that the boiler drum (the biggest and heaviest single item of equipment in a power plant), used to separate the bubbles of steam from the water, and re-circulating pumps are not required.

"It is this that in part makes the 'once-through' idea so attractive," Sporn said. "The boiler becomes, in effect, a continuous run of tubing into which water is pumped at one end and out of which highly superheated steam is delivered at the other end." In such a boiler, the feedwater is not delivered to a central drum. Instead, it passes directly from a newly designed feed-pump through the boiler unit and is heated and converted to super-heated steam at 1,150 F, passing through the boiler and super-heater just once.

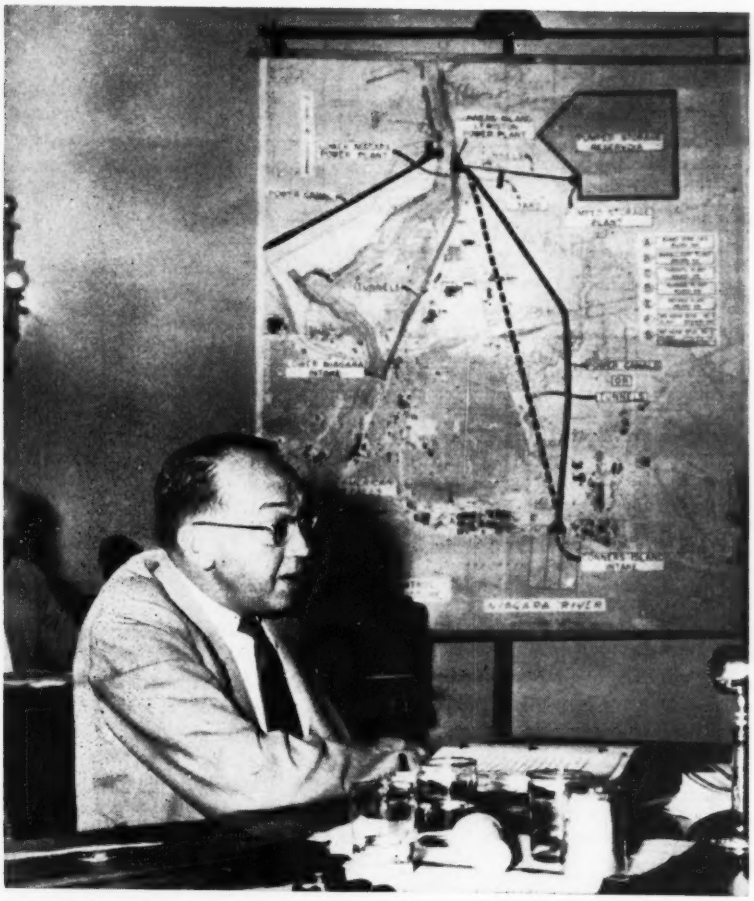
Higher Efficiencies Foreseen

"The use of higher pressures, higher temperatures and new ideas in reheat at Philo," Sporn declared, "will make possible not only new world standards of efficiency in generation of steam-electric power, but ultimately will make possible capital reductions by compressing size of units and bringing about more effective utilization of materials. In this work there will be available the background of experience of the last 30 years along similar efforts integrated by the three organizations—AG&E, GE, and B&W."

"Even more important," he continued, "is the fact that the successful development of power generation at this new plateau of higher pressures and temperatures will make possible in time still higher pressures and temperatures and additional reheats and resulting efficiencies hardly visualized a few years ago. Efficiencies of conversion of the heat in fuel into electric energy of the order of 50% are distinct possibilities. Certainly they loom on the horizon."

The new Philo Plant unit will be a developmental model and relatively small as modern generating units go. However, to cross the barrier of critical pressures, new concepts of turbine design will be required for this machine. Its 120,000-kw capacity will increase net generating of Philo Plant to 495,000 kw. It will replace, and use the same building now occupied by, a 40,000 unit whose antiquity dates back to 1923.

The AG&E president declared that the new advance would became available to the entire power industry. "In conformity with that tradition," he said, "a more detailed and technical initial description of the development will appear in the industry press within the next few weeks. When the project is fully completed, it will be described in still greater detail—and in full."



EARLE J. MACHOLD, president of Niagara Mohawk Power Corp, testifies before Congressional committees on plan of private utilities for development of more power from Niagara River

Rival Niagara Plans Aired . . .

. . . at joint hearings before House, Senate Public Works Committees. Private, state, federal proposals offered

Three-way fight over development of an additional 1.1 million kw of power at Niagara Falls simmered last week following a whirlwind, joint hearing by House and Senate Public Works Committees.

During the two-day session, May 14 and 15, proponents of electric company, federal and state development paraded their plans before the committee members. At stake is whether Congress will give its nod to private or public development of the additional power potential at the falls.

The committee chairmen indicated there is little chance of any quick action on the matter.

But there was little reluctance from the administrative branch to give its view. President Eisenhower said he thought the decision was primarily a New York State responsibility and he should be glad to see the authority given to New York to handle it in any way it saw fit. Interior Secretary Douglas McKay had expressed the same view earlier.

Presents New York's Case . . . These statements complemented arguments put forward at the joint committee hearing by Chairman John E. Burton of the Power Authority of the State of New York. He asked the lawmakers to turn the matter over to the Federal Power Commission with no strings attached. There was no bill before the committee providing for state development. If Burton's suggestion was followed the State Power Authority would receive priority over any electric company application for construction and operation of the Niagara redevelopment. At the same time, Burton opposed federal construction of the development because "there is no reason for it," and because the preference requirements would defeat the integration of a Northeast power pool with output from the proposed Niagara project.

Private Plan . . . Earle J. Machold, president of Niagara Mohawk Power Corp, representing his own and four other New York utilities, carried the ball for electric company development. He asked the two committees to approve a bill which would direct FPC to issue a license to the utilities for power development at the falls.

Machold said the five companies are prepared to start work "immediately" on the $400-million power project. He noted that private enterprise pioneered Niagara hydro development more than 50 years ago and has been "ready, able and willing to complete it for over 30 years."

Bills which would provide for federal construction and operation of the additional power potential at Niagara were introduced and supported at the hearing by Senator Herbert H. Lehman and Rep Franklin D. Roosevelt, Jr, both Democrats of New York. These bills would permit transfer of the project to the state of New York if and when the state agreed to assume the financial responsibility.

Lehman and Roosevelt last week asked New York Governor Dewey to discuss with them a possible compromise on the issue of federal vs. state development. Dewey consented to talk the problem over.

One controversial item in the Roosevelt-Lehman bill is a "preference" clause similar to that contained in federal flood control legislation.

In an effort to gain more sympathetic consideration for the bill, Senator Lehman offered an amendment which would provide for issuance of federally supported bonds for construction. This would avoid direct federal appropriations for the project. Roosevelt reluctantly agreed to this amendment, but said he and Lehman considered it only as an alternative to federal appropriations.

DISCUSSING "MR KW" CONTEST at PCEA annual meeting are, left to right, R. S. Stevenson, Allis-Chalmers Manufacturing Co; George C. Tenney, McGraw-Hill Publishing Co; and Bayard L. England, president of EEI and Atlantic City Electric Co

Not Worried by Production Dip

McGraw-Hill's Keezer tells Pacific Coast Electrical Association U. S. economy is strong enough to weather it

The nation's economy is strong enough to absorb an anticipated 10% drop in industrial production in the year immediately ahead and then pick up and continue expanding, McGraw-Hill's top economist told the 36th annual convention of the Pacific Coast Electrical Association at Hobergs, Calif., May 13-15.

Most important factor supporting confidence in our national economy, said Dexter M. Keezer, director, Department of Economics, McGraw-Hill Publishing Co, New York, is the high level of investment in new industrial plant and equipment planned for the near future.

In addition, he said, there are these factors: An expanding market based on population growth and a broadening income base; development of new products and materials and better ways to sell them through research; a tax system geared to lighten with a decline in income; and insulation of farm prices and wage rates against catastrophic declines.

Primary reason for expecting a 10% decline in production, and a lesser one in gross national product, Keezer said, is that automobile, steel and television manufacturers are producing at a pace "which cannot be long sustained." And if the new administration's effort to beat inflation is to succeed, he added, business must do a much better selling job than it has been required to do at any time since the end of the war.

The Future . . . Horizons in generation, transmission, distribution and communications were explored during a symposium which led off with a paper by W. L. Chadwick, Southern California Edison Co, and presented by George C. Tenney, vice president, McGraw-Hill Publishing Co, San Francisco. Most significant advance in hydro generation has been an increase in impulse wheel efficiency from 84-86% to reported high of 92%, the symposium disclosed. In steam generation, steam conditions of 4,500 psi and 1,150 F initial with reheat steps at 1,051 F and 1,000 F have been reported. But at present, Chadwick pointed out, except in high fuel-cost areas increased cost of reheat equipment for existing pressures and temperatures is close to point of diminishing returns.

Some of the problems in steam generation to be solved, he said, are these: Development of an alloy to remain stable after 200,000 hours of operation; means of keeping boiler controls and piping costs within practical limits; schemes for multiple reheat installations; generation and handling of steam above critical pressure; and maintenance of stability of steam and steel above 1,100 F.

High Voltage . . . Transmission at 500 kv is not too far away, said J. F. Sinnott, San Diego Gas & Electric Co. He added it would be well to design and construct present lines for operation at higher voltages than those initially impressed. Beyond customary lines with super voltages, Sinnott said, transmission of large blocks of power for long distances may have to be based on entirely new principles. He suggested designs embodying electrostatic or electromagnetic means of confining the energy to the conductor.

His prediction was that transmission lines of the future will be relatively simple buried pipes compared to modern underground cables and will not have to rely upon bulky and costly dielectric mediums used today.

Aerial cable and secondary series capacitors for distribution systems were discussed by T. A. Phillips, Arizona Public Service Co, Phoenix. Use of aerial cable, said Phillips, permits spans of 200-215 ft, mid-span taps running directly to the building with shorter services as a consequence, and a cleaner pole for joint-use purposes. In addition, safety and appearance of pole are enhanced, he pointed out, along with lower reactance and better voltage regulation, by installations of aerial cable.

C. E. WARSAW, United Gas Improvement Co (center) chats with Chairman C. T. Schofer after his luncheon talk before PEA T&D. Seated is R. C. McKee, committee vice chairman

Aluminum Towers Get Backing

Structural aluminum alloy must be recognized as a competitor to steel for transmission towers, R. B. Clapper, Kaiser Aluminum Co, told the Pennsylvania Electric Association Transmission and Distribution Committee at its recent meeting at Dallas, Pa.

In one example the aluminum cost $1,124 to $689 for galvanized steel, but the drastic difference in weight reduced erection cost, Clapper declared. When elimination of repeated painting and outages for painting are evaluated, the cost difference should be small, he said.

Improvements in design will reduce the need for sleet melting procedures, predicted F. H. O'Neill, Pennsylvania Power & Light Co. As older lines are rebuilt to incorporate these principles, he said, sleet problems will become of decreasing importance. Experience has shown the need to melt about nine times a year on up to 36 transmission lines and numerous 12-kv distribution feeders.

High-speed clearing has demonstrated its value for preventing conductor burning during periods of galloping conductors, said C. W. Cornforth, Public Service Electric & Gas Co of New Jersey. Of two otherwise identical 795 Mcm ACSR transmission circuits, one with 9-cycle relaying, showed no burns after tripouts while the other with conventional relaying required conductor repairs at ten locations.

Kuykendall Named FPC Chairman

Jerome K. Kuykendall has been named chairman of the Federal Power Commission.

White House announcement of the appointment was made May 15 as Kuykendall took the oath of office as a member of the commission. His term expires June 22, 1957.

The Pomeroy, Wash., native, and former chairman of the Washington State Public Service Commission, was confirmed by the Senate as an FPC commissioner April 23 (EW, May 4, p 61).

Kuykendall is the first Eisenhower appointee to become a member of FPC. He succeeds Thomas C. Buchanan who failed last year to gain Senate confirmation for reappointment to the top FPC post.

Shifts at Interior

McKay eliminates five divisions of the department to straighten lines of command

Interior Secretary Douglas McKay last week made his first major move to simplify department organization and straighten lines of command as recommended by Undersecretary Ralph A. Tudor.

McKay wiped out five divisions in his office that had slowed administrative operation of the department. Abolished by his order were the program staff and the Divisions of Water and Power, Land Utilization, Minerals and Fuels, and International Activities.

Bureau chiefs and assistant secretaries now can work out overlapping problems by direct personal conference. Up to now, if two bureaus like Reclamation and the Fish and Wildlife Service had a problem on a Reclamation dam, the two bureau chiefs passed the difficulty to the Water and Power Division and the program staff for settlement.

Even more important, the former divisions had become interpreters of department policy. They had assumed much of the responsibility that normally rests on bureau chiefs and assistant secretaries. That responsibility now is returned to these officials of the department.

New Group Set Up . . . To help all these men on their tough problems, McKay set up a purely advisory group in his office, called the Technical Review staff. This unit will give help when requested but won't make any studies until asked.

McKay also shook down the department's seven field committees and closed their offices. Full-time chairmen and staffs for the committees are abolished. Field representatives of Interior bureaus will carry on the committee work in each of the major river basin areas where a group has been operating. One of the field men will serve as chairman.

All told about 150 jobs have been eliminated. The new Technical Review Staff will retain perhaps 25 of the people who would otherwise be fired. Final size of the new technical group hasn't yet been fixed.

THE ELECTRICAL WEEK
CONTINUED

nois . . . Westinghouse Electric International elects G. L. Wilcox as vice president—operations.

Savannah EP reports seven all-electric schools in Savannah each having 100 kw in cooking and refrigeration equipment in cafeterias. Two of the schools are completed and others are under construction. Electric cooking is promoted by company. Two light-conditioned homes sponsored, advertised and staffed by Savannah EP, resulted in quick sale of all 46 light-conditioned homes with remote controlled wiring in one subdivision. Builder was so impressed by appeal of this type lighting and control in homes that it will be made standard equipment in all future homes he builds.

International Union of Operating Engineers, AFL, has struck four power plants in the Central Illinois Public Service Co over a dispute involving union membership for supervisors. Two largest of the four plants are operating with supervisory personnel. As EW goes to press, service has been "perfectly normal."

Consolidated Edison Co of New York elects Charles E. Eble vice president of taxes, auditing and general accounting; M. LeCompte Waring vice president of production and operating; and C. Wesley Meytrott vice president of government contracts . . . Virginia E&P elects Tom D. Fulford vice president of sales and Walter I. Dolbeare vice president of area development.

U. S. Supreme Court has agreed to review decision limiting FPC's licensing powers (EW, Jan. 12, p 58), but probably will not hear case before fall . . . Depa lifts all federal controls restricting electric utility inventories.

IN THE INDUSTRY

This is the age of cooperation in the electric utility industry. In all sections of the country electric companies are joining together to handle projects that no one company can handle alone.

In New England the companies are stressing development of the area and of natural resources. In New York five companies have banded together to redevelop Niagara. In Ohio and the Midwest, utilities have banded together in Electric Energy, Inc, and the Ohio Valley Electric Co to provide power for installations of the Atomic Energy Commission. There are four utility combinations working on peacetime applications of atomic energy. And there are countless pools to facilitate the exchange of electric energy between or among companies.

These are only some of the examples of cooperation in which electric companies are involved. And here is another and the latest made public.

More Power for Wyoming . . . Foreseeing tremendous future power demands in Wyoming, six companies have united in a study to determine suitable sites for steam generating plants near coal deposits in the state. The companies are Mountain States Power Co, Albany, Ore., which has a division office at Casper, Wyo.; Cheyenne Light, Fuel & Power Co; Western Public Service Co, Laramie; Rawlins Electric Co; Southern Wyoming Utility Co, Rock Springs; and Black Hills Power & Light Co, Rapid City, S. D., which has a division office at Newcastle, Wyo.

Cooperating with the private companies are the Bureau of Reclamation, the Wyoming Natural Resources Board, U. S. Geological Survey, and the University of Wyoming.

W. D. Johnston, vice president, Mountain States Power, and secretary of the Power Development Committee formed by the utilities, said the private companies are financing an engineering study by Ebasco Services, Inc. He said the utilities envision a new power industry in the state which will be capitalized at between $10 and $20 million at the outset.

At a recent meeting of the Missouri Basin Inter-Agency Committee, Johnston said, "Steam power is recognized by all interested parties as ultimately necessary to supplement the hydro power resources of the Wyoming area, even assuming all feasible hydro sources are orderly developed." He added that the "great potential coal and oil resources in Wyoming would provide steam power that presents attractive possibilities for highly efficient and economical development as well as the special means of achieving the much needed additional capacity to provide future industry and commerce an unfailing source of power in the state."

Breck Moran, chief of the resources development division of the Wyoming Natural Resource Board, said, "The Bureau of Reclamation, recognizing the seasonal nature of hydroelectric generation and the rapidly growing demand for power in the region, concurs with the private power companies' plans and is cooperating."

The private utilities in Wyoming are now taking a major portion of their load from Reclamation plants and are the bureau's biggest customers. The utilities are distributing about 75% of the output of the Riverton, Shoshone, and Kendrick projects and are providing 75% of the revenue for those projects.

With this additional example of cooperation perhaps the industry can look forward to the 1951-1960 decade going down on its books as the "Era of Cooperation."

TECHNICAL NOTES
ARCHER E. KNOWLTON

Water cooling of network transformers can provide up to 40% increase in rated capacity to carry the load without overheating.

One microampere will quite well neutralize the **electrostatic discharge** of 10^{13} electrons issuing from a foot-wide belt electrostatically energized to some 20 kv and travelling 60 fpm.

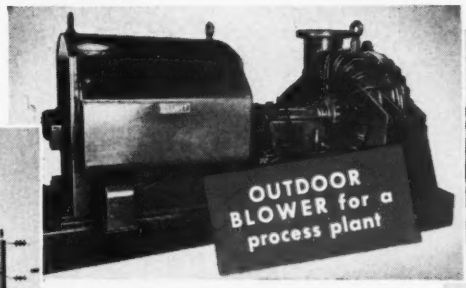
Acrylic fiber can be processed to be flame-proof at 1400 C. Woven into fabric it has potentialities for flyash collection as well as for fire fighters' clothing.

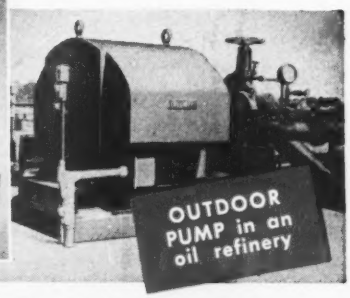
Clearance variation between shafts and sleeve- or journal-type bearings during operation can be measured at high speeds by a mutual-inductance type of electrical distance-measuring element.

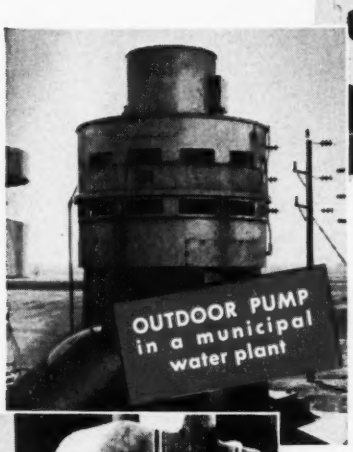
Safety is learned by some employees through training and constant attention, by others only by accident.

Noise has hardly been cited as a complaint about distribution transformers especially if pole-mounted.

Put them outdoors...





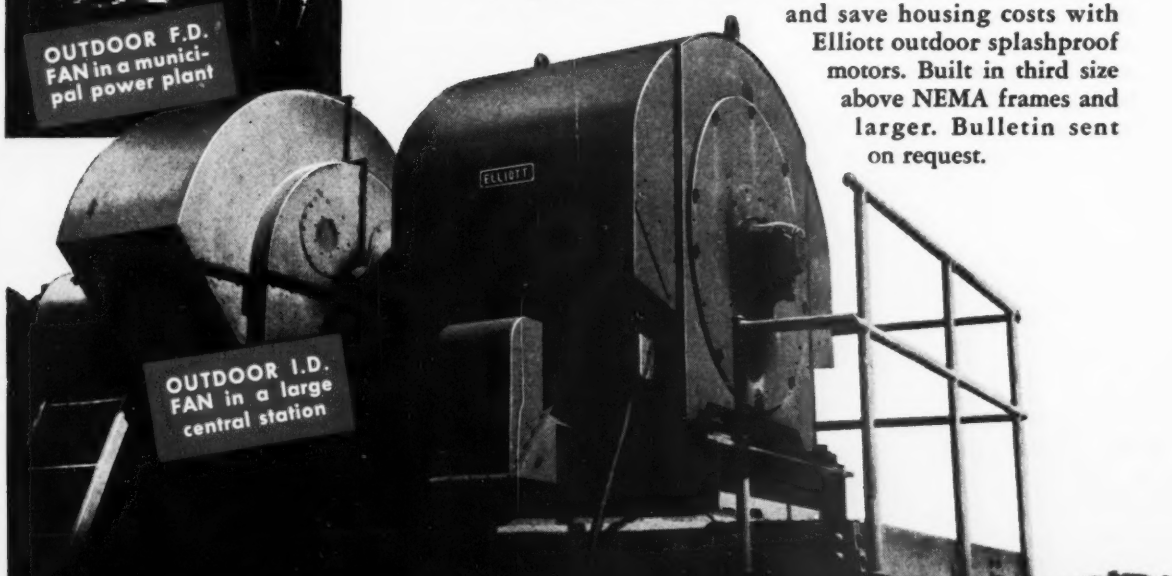


with ELLIOTT

OUTDOOR SPLASHPROOF MOTORS

These motors solve every difficulty of outdoor electric drive without the expense and complexity of totally-enclosed construction, of special vented foundation, or of protection from weather other than their own enclosure. Their "Fabri-Steel" construction permits of baffling design and air filtering which in hundreds of outdoor installations in all parts of the United States has proven immune to wind-driven snow, sleet, rain, fog, salt spray and dust-storm.

Put your motor drives where you want them, and save housing costs with Elliott outdoor splashproof motors. Built in third size above NEMA frames and larger. Bulletin sent on request.



ELLIOTT Company

Ridgway Division
RIDGWAY, PA.

R2-16

For Elliott Crocker-Wheeler industrial motors, 1-200 hp, write Elliott Company, Jeannette, Pa.
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Meeting the Nation's Growing Power Load

Westinghouse Magamp . . . new answer to more effective generator voltage regulation

The new Westinghouse Magamp Regulator and Excitation System provides Utilities a more reliable means of regulation for synchronous machines. As used with a self-excited exciter, the Magamp system has a faster response and requires little or no maintenance.

There are no moving parts in the regulating and limiting components—nothing to wear out. An additional contribution to reduced maintenance is the fact that the power supply in the Magamp system is a motor-driven, a-c generator having a permanent magnet field—it has no slip rings, no commutator, no brushes.

The Magamp system provides more effective regulation of voltage than that obtainable with previous types of rotating amplifier regulators. Further, it can be successfully applied to any size, speed or type of a-c synchronous machine; that is, it is equally applicable to the excitation systems for turbine generators, water-wheel generators and synchronous condensers.

The development of Westinghouse Magamp is one more example of thinking ahead for tomorrow's peak loads—and improved equipment design and operation to meet them. Translated into Utility management objectives—investment in equipment is kept in proper proportion, as systems expand to satisfy America's constantly increasing demands.

J-97173

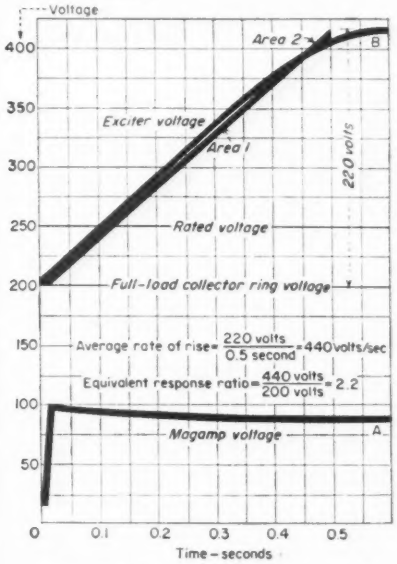
YOU CAN BE SURE...IF IT'S

Westinghouse

Response ratio test demonstrates Magamp capability

In order to demonstrate the capability of the new regulator and excitation system, a 420-cycle Westinghouse Magamp System was tested in conjunction with a 50,000-kw, 3,600-rpm turbine generator. A 215-kw, direct-connected exciter was used. The extremely fast response of the Magamps is illustrated by curve A of the chart below. This shows that the power Magamp reaches ceiling voltage in approximately 0.02 second or 1.2 cycles on a 60-cycle basis. The output voltage of the main exciter, curve B, reaches its maximum magnitude of 420 volts, or 168 percent of rated exciter volts, in approximately 0.6 second. If the equal-area criterion of determining exciter response ratio is applied to this curve, that is, making area 1 equal area 2, the equivalent response ratio of the excitation system is 2.2.

Such equivalent response ratios are not required for the usual application, but the test shows the capability of the Magamp. The desirable response ratio of the exciter is dictated by system stability considerations.



Ready for installation

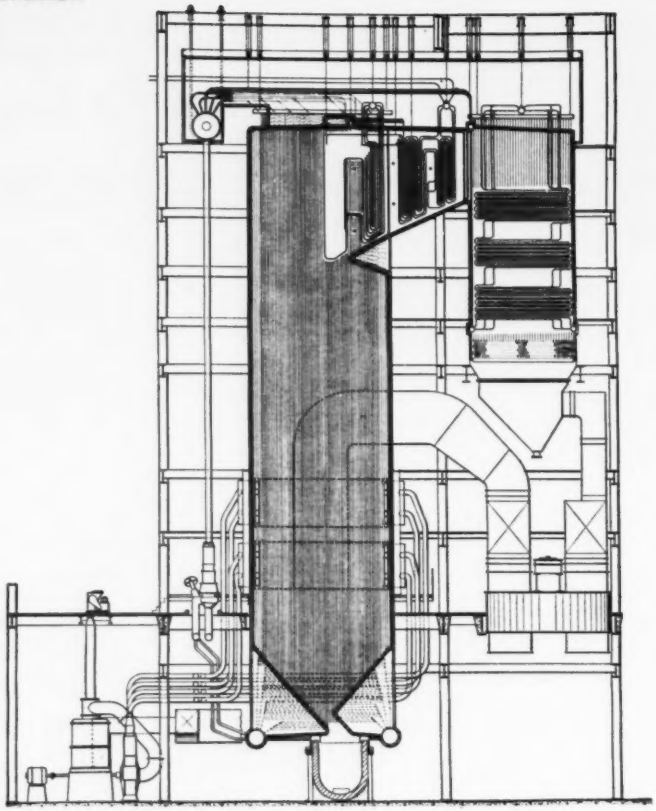
All components of the Westinghouse Magamp Regulator and Excitation System are assembled in a standard, low-voltage, metal-enclosed switchgear cubicle adjacent to the exciter field rheostat and field breaker cubicles. The entire assembly is completely factory adjusted and tested—shipped ready for installation.

Further details on the new Westinghouse Magamp can be supplied by your nearby Westinghouse Representative—or write direct to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

STATE LINE STATION

Chicago District Electric Generating Corporation
Commonwealth Edison System

C-E controlled circulation boilers



The C-E Unit shown above is now in process of engineering for the State Line Station of the Chicago District Electric Generating Corporation, Hammond, Indiana. State Line Station is one of the eleven generating stations of the Commonwealth Edison System. Sargent and Lundy are the consulting engineers.

This unit is designed to serve a 191,000 kw turbine-generator operating at a throttle pressure of 2000 psi with a primary steam temperature of 1050 F, reheated to 1050 F.

The unit is of the controlled-circulation, radiant type, with the reheater section located between the primary and secondary superheater surfaces. An economizer section follows the rear superheater section and regenerative air heaters follow the economizer surface.

Pulverized coal firing is employed using bowl mills and tilting, tangential burners.

B-675

C-E

COMBUSTION ENGINEERING, INC.
Combustion Engineering Building
200 Madison Avenue, New York 16, N. Y.

ALL TYPES OF BOILERS, FURNACES, PULVERIZED FUEL SYSTEMS AND STOKERS; ALSO SUPERHEATERS, ECONOMIZERS AND AIR HEATERS

DOUGLAS McKAY, Secretary of Interior, addresses APPA annual meeting (left panel). At right, A. L. Pierce, Borough Electric Works, Wallingford, Conn., gets distinguished service award from APPA President Duvall. Pierce has spent over 50 years in utility field

McKay: "Public Power Is Here to Stay"

Public power advocates are uneasy over the emerging Republican federal power policy.

This was evident time and again at the tenth annual convention of the American Public Power Association in Boston May 12-14. There was no direct criticism of the Eisenhower Administration in official proceedings. But the association let it be known in several resolutions that it is determined to protect the advances it has made under past administrations.

Reassurances came from Interior Secretary Douglas McKay in his first out-of-Washington address since he became a cabinet member. He told the convention, "public power is here and it is going to stay."

The Secretary again voiced disagreement with suggestions that the federal government should get out of the power business. On the contrary, he promised all-out support for funds and Congressional approval of such Pacific Northwest multipurpose projects as McNary, Chief Joseph, Palisades, and the Dalles. He endorsed generally the federal construction of the large multipurpose dams.

Hits Policy of Democrats . . . But McKay made it clear that he does not intend to continue the power policies of past Democratic administrations. He charged that his predecessors at Interior had built the federal power structure with the idea of "a completely federalized electric generating system, a government monopoly in large areas of the United States."

Preference Issue . . . In selling the power, McKay said, "federal power should be brought into communities and distributed by whatever retail systems prevail in the community at the time the power is available." He said this power should be sold on long term contracts to preference customers and any remaining power should be made available to other customers in the area on an equally long-term basis.

McKay put his side of the Hells Canyon controversy before the convention but this came after members had voted to oppose any private development of the Snake River at the Hells Canyon site.

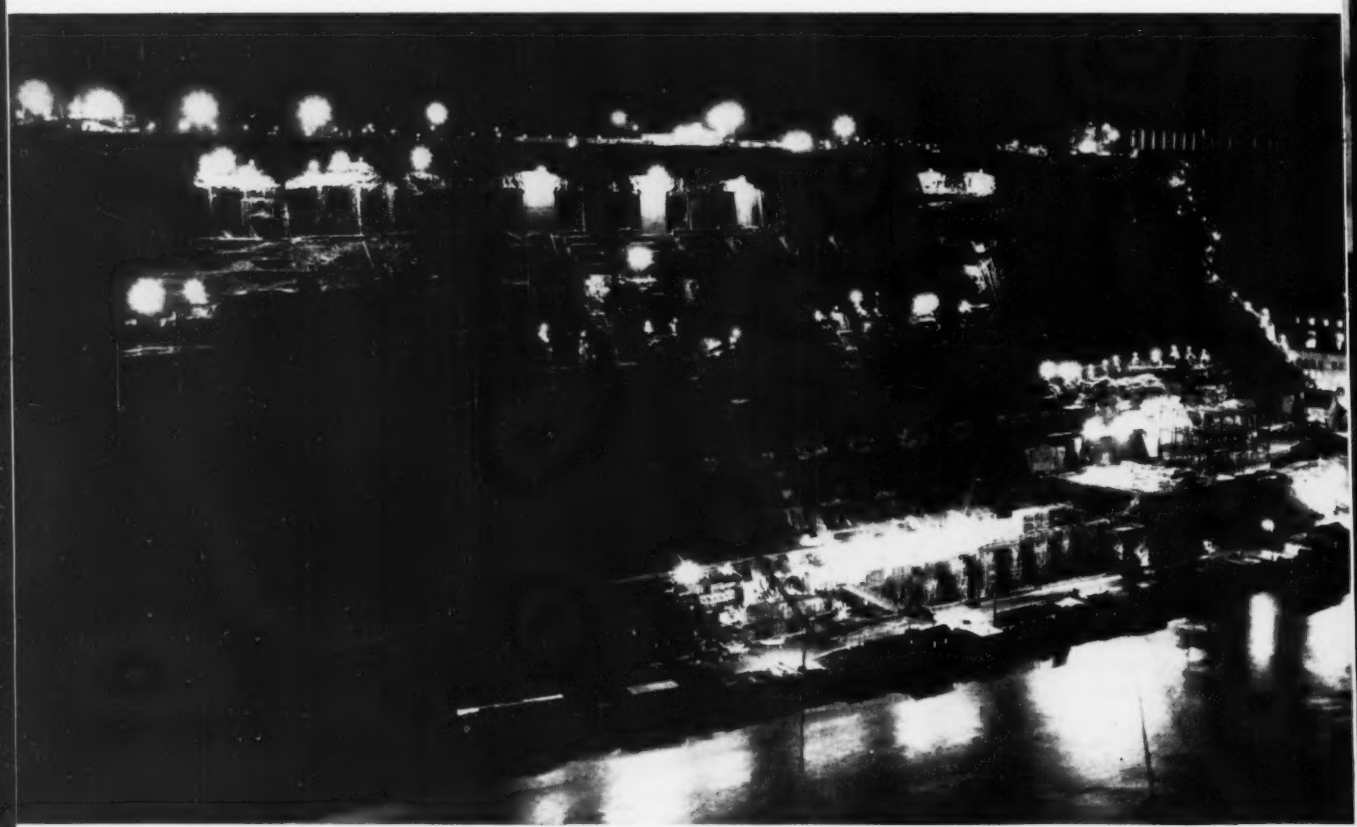
General apprehensiveness of the convention delegates was expressed by Ralph J. Duvall, retiring APPA president, and manager of Kansas City (Kan.) Board of Public Utilities.

"In the realm of public power and water resources development," Duvall said, "there have been slashes here and slashes there. It is doubtful if a berserk man swirling through a crowd with a sword in each hand could do a more effective job . . . I hope the pendulum doesn't swing far enough to endanger the safety or economy of the nation."

Resolutions . . . In resolutions adopted at the convention, APPA:

- Reaffirmed its stand favoring administration of the "preference" clause in same way as during the Democratic administrations.
- Urged that Congress restore the $3 million continuing fund for Southwestern Power Administration deleted by the House.
- Opposed government acceptance of a power transmission contract of the type offered by Georgia Power Co for delivery of power from government dams to preference customers.
- Urged that any benefits accruing from use of rapid tax amortization by electric companies be immediately passed on to consumers.
- Urged that publicly owned utilities be permitted to share in production of electricity from nuclear-fueled plants once these are feasible.

HYDRO SITES abound for both federal and private development in Canada. This one, the Snare River Power Development, is on the river northwest of Great Slave Lake. It is the property of Northwest Territories Power Commission and serves an adjacent mining camp



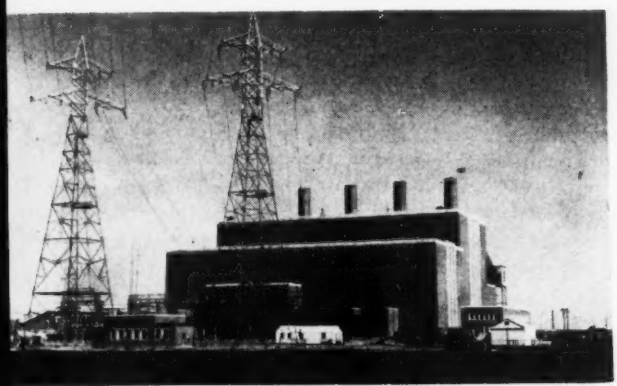
NIAGARA REDEVELOPMENT of Ontario Hydro is one of two major hydroelectric sites remaining in Southern Ontario (St. Lawrence is the other). Commission is rushing 1.2 million-hp Sir Adam Beck Station No. 2 so that few higher-cost steam plants, like . . .

Hydro: Canada's Word for Power

Unlike the United States, the Dominion has still to develop most of its water power potential before it is forced to rely on coal or nuclear-fired plants

SMALL PLANTS dot mountain streams in the West. Bonnington Falls development near Nelson, B. C., is controlled by a mining company

BEAUHARNOIS PLANT of Quebec Hydro-Electric Commission was expanded recently to 1.4 million hp to meet needs of Montreal



. . . RICHARD L. HEARN STATION in Toronto will have to be built. With 536,000 hp capacity, this is Dominion's largest thermal plant

In Canada, the word for electricity is hydro. One million hp of hydroelectric capacity was brought on the line last year, bringing the country's total to more than 14 million. This year about 830,000 hp will be completed, and another 1.5 million is scheduled to be installed by 1955.

With all that, it's estimated that only 22% of the nation's known water power resources has been tapped.

Nuclear power generation is being explored and some limited areas, such as hydro-short southern Ontario, are being forced into steam generation. But as it has since the turn of the century, the answer to Canada's industrial expansion will continue to be water power. Witness these comments by two Dominion leaders:

● "One measure of Canada's industrial growth is to be found in our use of this country's water power resources," says Finance Minister Douglas Abbott. "Our hydro-electric capacity has expanded from 8.3 million hp in 1939 to 14.3 million hp today, an increase of nearly 75%. We have lately been adding to it at more than 2½% times the pre-war rate."

● "Canada's remaining wealth of hydro-electric potential and her great quantities of fuel, a substantial proportion of each lying in the areas still not heavily settled, indicate an immense future in the expansion of present industrial areas and in progressive development northward to take advantage of other natural resources," says J. A. Fuller, president of the Shawinigan Water & Power Co. Shawinigan has a large expansion program under way in the Province of Quebec.

With hydro so much in the Canadian picture, Dr. C. J. MacKenzie, president of Atomic Energy of Canada, says future use of uranium reactors "must be for power units serving special purposes and point sources of great heat energy where the costs of the energy will not be of major importance."

Although Canada is carrying on an active program of atomic energy development primarily at its research establishment at Chalk River, Ont., no responsible authority sees any likelihood of atomic power being used on a big scale in the country for years to come.

Hydro power progress is in evidence in every province of Canada and in the unorganized territories of the far north. Starting on the west, British Columbia Power Co brought in an 82,000-hp plant at Wahleach Lake, near Chilliwack, and has another big one at Bridge River scheduled for 1954 operation. British Columbia Power Commission added several plants in 1952 and will boost the capacity of its Campbell River plants to

INDUSTRIAL FIRMS account for a good bit of Canada's hydro generation. Shipshaw Power Dam on Saguenay River in Quebec was completed recently by Aluminum Co of Canada, which is building another huge power plant at Kitimat, B. C.

168,000 hp by bringing in two units of 28,000 hp each in the John Hart Plant this year. First units of the Aluminum Co of Canada's Kitimat plant will come in this year. Ultimate capacity is 2 million hp.

In Alberta Calgary Power Co has a new 30,000 hp unit scheduled for production in the Ghost Plant on the Bow River by 1954 and is actively expanding its distribution facilities. Edmonton, Canada's fastest growing city, has a new turbo-generator set for its steam plant in 1953.

Saskatchewan Power Commission added substantially to its thermal generating plants in 1952 and will continue to expand in 1953.

Biggest operation under way in Manitoba is an 80,000-hp plant at McArthur Falls on the Winnipeg River, due to operate by 1954. Last year the Manitoba Power completed its 114,000-hp development at Pine Falls on the same river.

Famine? . . . Southern Ontario, with its heavy industrial development, is Canada's major area of power shortage. To meet it, Ontario Hydro Commission is moving slowly into the production of steam power. But with no local fuel resources available, the commission is trying to develop all the hydroelectric power possible.

First Units of Ontario Hydro's new 1,260,000-hp generating station at Niagara Falls are scheduled for operation in 1954. The project involves diverting additional water from the Niagara River above the falls, conveying it by tunnel under the city of Niagara Falls to a 12-unit generator on the cliffs of the Lower Niagara Gorge (EW, May 26, p 15).

In 1952 the Commission brought the first unit its Otto Holden Station on the Ottawa River above Mattawa into operation. It will have an eventual capacity of 264,000 hp with additional units coming in this year. Two steam generating stations, one at Windsor and one at Toronto, began production in 1952 and are due to reach capacity, 264,000 kw at Windsor and 400,000 at Toronto, in 1953.

"In order to keep pace with the amazing industrial growth which has taken place in this province we have been forced into steam generation at a cost of well over double that of hydro generation," says Robert Saunders, Hydro chairman.

To avoid further increases in dependence on steam power, Ontario Hydro wants the St. Lawrence Seaway started at once. Saunders figures that without the seaway Hydro will be deficient by 679,000-kw in 1960, unless steam plants are built to make up the difference. With the seaway and without more steam plants it would have a reserve of 278,000 kw in 1960. Ontario's share of seaway power would be 1.2 million hp. Saunders says the St. Lawrence is the last untapped water source within economic transmitting distance of large load centers in Southern Ontario.

Feast . . . Though the chance of power famine exists in Ontario, a continuing feast is possible in the province next door: Quebec. It still has left to develop the huge power potential of the Lachine section of the St. Lawrence River and many other sites on the Ottawa River and on rivers flowing into the St. Lawrence.

In Quebec the major recent development has been at Beauharnois on the St. Lawrence. This year the Quebec Hydro-Electric Commission will complete the installation of generators there to use the whole flow of the river as it passes through the Beauharnois Canal, making a total output of 1,408,000 hp. During 1952 capacity was increased by 22,000 hp. Quebec Hydro also has a new plant under way on the Upper Ottawa River, first units of which will be brought in this year. Preliminary work is under way on a one million-hp development on the Bersimis River, with production scheduled for 1956.

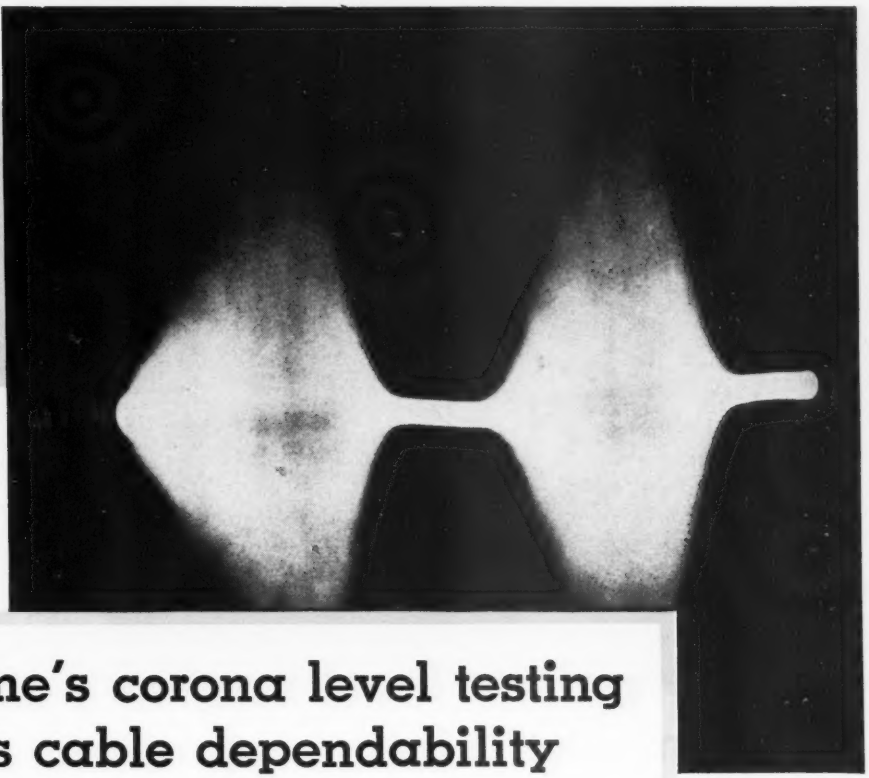
Industrial Power . . . Alcan has just completed a 275,000-hp project at Chute-du-Diable on the Peribonka River. Shawinigan Water & Power Co is completing an extensive diversion of water from the Hudson Bay watershed into the St. Lawrence River with an opening planned for 1953.

During 1953 the New Brunswick Electric Power Commission will complete its Tobique River development with an output of 27,000 hp and a 35,000-hp addition to the steam plant at Grand Lake. It will be the biggest development year in New Brunswick to date. Plans for future expansion center on the 450-mile-long St. John River which, it is believed, can produce about 800,000 hp by the construction of several dams.

In Nova Scotia the government power commission brought in a unit of 8,500 hp on the Bear River and the Nova Scotia Light and Power Co completed a smaller plant on the Gaspereau River. Additions to steam plants are in progress.

Newfoundland operations completed in 1952 included 7,500 hp on the Horse Chops River and enlargement of plants on the Exploits River. Developments planned for 1953 and soon after include a second plant on the Horse Chops River, additional units on the Exploits River near Grand Falls and Bishop's Falls, plants on the Trinity River, a plant at Menihek Rapids on the Ashuanipi River to serve the Labrador iron ore mines.

Specially designed ionization detector for routine factory use measures corona level of all-insulated cables rated at 3000 volts or over.



Why Rome's corona level testing assures cable dependability

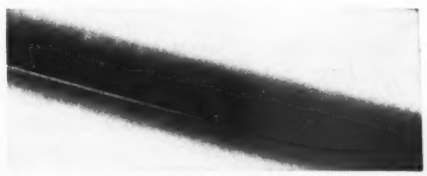
The picture above means trouble. It is an oscilloscope trace of internal ionization in an insulated cable.

Ionization is caused by the electrical break-down of air in pockets within the insulation, or especially where it has not been firmly bonded to the conductor surface or shield. Should this ionization occur at a value below the operating voltage of the cable, several destructive electrical effects may occur such as possible ozone cutting, reduced dielectrical strength, and a substantial increase in dielectric losses. Any of these hazards could result in early failure or reduce the efficient performance life of the cable.

Ionization is particularly dangerous because it cannot be detected by the ordinary visual, physical and electrical testing methods usually applied to cable.

So, to prevent guesswork, to assure you of maximum protection against ionization, *every foot of Rome insulated cable, rated at 3000 volts or over, is thoroughly tested by a specially designed ionization detector.* This instrument accurately measures the corona level of the entire cable. Unless the ionization voltage exceeds the intended operating voltage of the cable, the cable is rejected.

This is one more extra step in Rome Cable's standard manufacturing procedure that assures dependability. This completely new *NONDESTRUCTIVE* method of testing was developed by Rome Cable engineers and was first described in AIEE paper 48-198, "The Measurement and Investigation of Ionization Level of Rubber Insulated Cables," presented in August, 1948.



This X-ray reveals loose insulation—a major cause of ionization.

500,000 CM stranded single conductor RoZone insulated, shielded, RoPrene sheathed power cable . . . 15,000 volts, grounded neutral.

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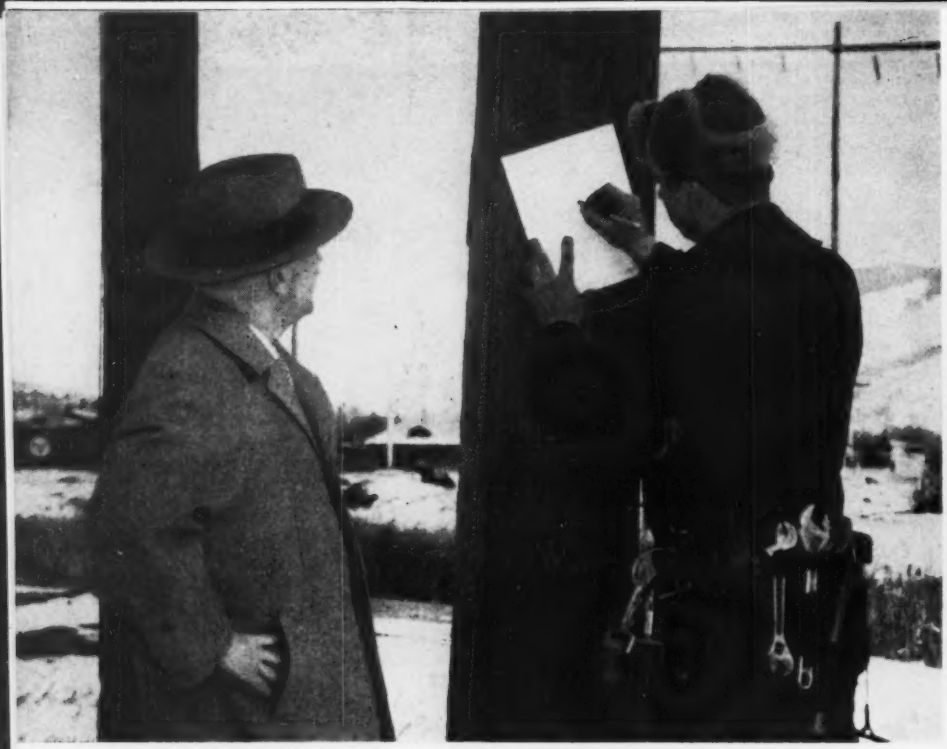


Lineman . . .

Engineer . . .

At Montana Power the Employees

Employees of Montana Power Co have become investor- and company-conscious following highly successful stock sale campaigns over the last two years. About 42% of all employees have purchased and continue to own stock through the drives conducted by the utility. Although the second is not yet completed, 564 employees have purchased 19,770 shares of common stock having a market value exceeding a half-million dollars.

While careful not to overrate benefits, company management feels that stock ownership will:

- Improve employee attitude
- Make employees better citizens by making them investment-minded
- Provide them with income to supplement government and company retirement benefits
- Encourage sales of company stock to other citizens in the service area.

Inexpensive Proposition . . . Cost of the operation has amounted to less than $3,000, or about $5 for each stock-buying employee. Company officials note cautiously that this low cost could be laid to certain favorable factors in the transaction that will not recur, and which may not be present for other companies.

Impetus for the program was provided by an employee opinion survey made in January 1950 by Central Surveys, Inc. Of those asked, 72% indicated interest in stock purchase. Although majority of Montana Power's stock was held by American Power & Light Co at that time, distribution of stock to the public was only a matter of time. There would then be stock available for purchase and resale to employees.

Distribution of stock held by AP&L was made early in 1950. After a year of sales on the New York Stock Exchange to settle the market, Montana's management asked for approval of an employee stock sales program at the 1951 stockholders' meeting. To meet Securities and Exchange Commission requirements, these were among provisions included in stockholder proxy statement:

- Limitation of overall sales to 20,000 shares of stock in any one year.
- Limitation of individual purchases to 100 shares in any one year
- Stock would be sold at price paid by the company, with no discount or other special inducement
- Favoritism would be prevented by selling stock on first-come-first-served basis
- While employees could receive dividends during payment period, they would be charged 4% interest on unpaid balance.

Groundwork Laid . . . First offering became effective Sept. 21, 1951, and was planned to continue for 12 months or until sales reached $280,000 (about 11,000 shares at existing market price).

A letter from Montana Power's president (F. W. Bird, now chairman of the board) introduced the offer, and stated that no employee was under obligation or pressure to buy. Also sent was a statement concerning the offer along lines required by SEC, including a recent trial balance and income statement. Em-

Stenographer . . .

Are Taking Stock of Their Company

ployees received order blanks and stock power forms.

Because advance discussion with executives indicated that sales would be substantial, the stock market was tested by purchasing 1,000 shares on the open market. This had great effect on the market price because the stock was relatively inactive. After it became known the company was in the market for substantial amounts of stock to implement the plan, Montana Power was able to arrange for direct purchase from one company that had received stock distributed by its parent. This gave Montana Power a fixed price, which it could quote to employees until stock was exhausted, and also made purchase possible without any brokerage fees.

Successful Drive . . . Sale of the 11,000 shares was completed in about two months, though the same speed in future campaigns was not expected by the management.

These expectations were found correct in the second drive started in October of last year, for which 6,000 shares were secured in advance. A majority of first-offer buyers came in a second time, as did many new subscribers. To spread the offering over a larger number of persons, sales were limited to 25 shares per individual for the first three months. After that employees could take additional shares up to a total of 100.

Quick Sale . . . The first 6,000 shares were sold in less than three months. It is expected that the total offering of about 10,000 shares will be sold out before the 12-month period expires.

In many localities, more than 50% of employees have purchased stock. Management believes that if offerings are continued long enough, more than 50% of total payroll will be stockholders.

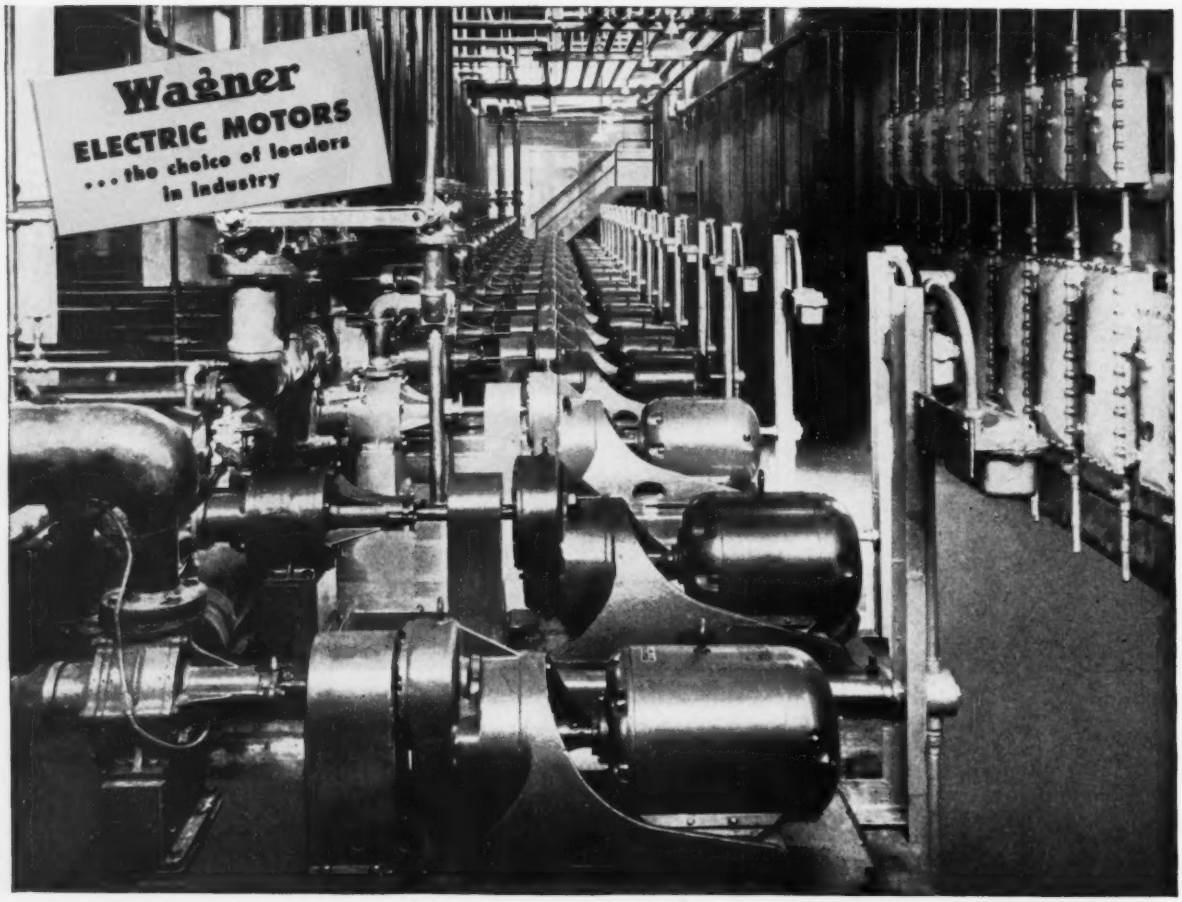
In certain company departments 100% subscription has been reached, principally in the general office where employees were better acquainted with the company and investment procedures and where the plan was called to their attention more often.

Who's Who in the Pictures

Lineman is John Banovich signing up for stock in presence of Frank Lynch, manager of the Butte division.

Engineer is Roger Hafacker showing certificate to his wife and children, Michael and Susan.

Stenographer is Mary Yunker receiving her stock certificate from J. E. Corette, power company president.



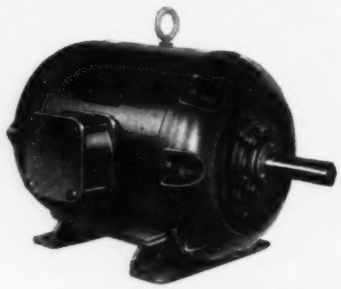
Wagner explosion-proof motors provide *safe, sure, power for Sinclair*

The Sinclair Refining Company in Houston handles almost every type of oil and gasoline imaginable... it even produces coke from petroleum, which closely resembles coal coke, and is used by steel plants in their open hearth processes. The latest addition to this refinery is a barrel house and grease plant where products from the refinery are compounded and canned.

Shown above is a row of the pumping units that handle all the various oils from the refinery field which are brought into the barrel house for compounding and storage. The entire installation is powered by dependable, efficient Wagner Type HP Motors, is explosion-proof, and each pump is individually push button controlled.

Sinclair uses many other Wagner motors in their various processes, because Wagner motors are proved by years of service—safe and economical. Wagner engineers are qualified to specify the correct motors for *your* requirements as well from the complete line of Wagner motors in standard types from 1/125 hp. to 400 hp. Consult the nearest of our 31 branch offices or write us.

Wagner Electric Corporation
6456 Plymouth Ave., St. Louis 14, Mo., U. S. A.



WAGNER ELECTRIC CORPORATION
6456 PLYMOUTH AVE., ST. LOUIS 14, MO., U.S.A.

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

ELECTRIC MOTORS
TRANSFORMERS
INDUSTRIAL BRAKES
AUTOMOTIVE
BRAKE SYSTEMS—
AIR AND HYDRAULIC

WM50-8

MEETING REPORT

Protective Relay Conference

Utility and industrial plant engineers attend parley sponsored by SEE and AIEE at Georgia Institute of Technology

More than 130 utility and industrial plant engineers attended the 1953 Conference on Protective Relaying held May 14-15 in Atlanta, Ga. The conference, sponsored by the Southeastern Electric Exchange and the American Institute of Electrical Engineers, was presented by the Engineering Experiment Station and the School of Electrical Engineering in cooperation with the Engineering Extension Division, Georgia Institute of Technology.

C. E. Robinson, Tennessee Coal and Iron Division of U. S. Steel Corp said that high reactance grounding should be avoided in industrial power systems since harmful transient overvoltages are produced by switching of faulted circuits.

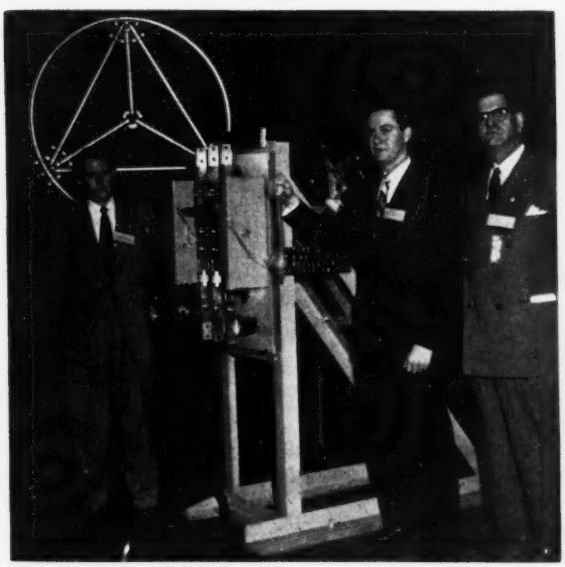
Directional Comparison System . . . The directional comparison type of carrier relaying system is more applicable to three-terminal line protection than the phase comparison system, said C. W. Cogburn, Florida Power & Light Co. He said that such factors as economics, operating requirements and past experience make the application of protective relays on three-terminal lines both an art as well as a science. Very often the best solutions can be reached, he said, by closer coordination of design and protection which must begin early in the planning stages.

The advantages to be derived from a cathodic protection system must justify the expense of installation and operation of such a system, stated R. J. Raudebaugh, Georgia Institute of Technology. Careful planning and analysis of a given situation may be required before a sound decision can be rendered, he said.

Inverse Time Relays . . . The use of extremely inverse time relay allows coordination with the fusing at lower values of current, while fast clearing for severe faults is still maintained, according to A. L. Soule, III, New Orleans Public Service, Inc. He said that this relay will not only solve the fuse coordination problem, but will also aid in the problem of load pick-up, which has been increasing with the increase of air conditioning loads and other intermittently operated automatic devices.

Automatic data recording provides a means of obtaining printed data immediately after each operation, whether the operation is manually controlled or automatically actuated, according to S. A. Kroll, Taller & Cooper, Inc.

W. K. Sonneman, Westinghouse Electric Corp, described a new inverse time overcurrent relay with adjustable characteristics. He stated that the new relay provides a three point control of the time curve with obvious advantages from an accuracy standpoint. Mechanical simplification has been obtained through the elimination of gears and other improvements.



Electrical Products Are Exhibited at Chicago Show

Electrical Industries Show in Chicago May 11-14 featured exhibits of industrial electric equipment by the nation's electrical manufacturers. Delta Star Electric Co display (left picture) included a 7.5 kv, 600 amp regulator by-pass switch. Company also exhibited disruptor switches. Natural Para rubber from Brazil, rubber insulated wires and cables were exhibited by Okonite Co (right picture).

The show was held in conjunction wtih the electrical modernization conference. Both were sponsored by the Chicago Electric Association.

PUD in Oregon . . .

. . . to serve Willamette area is being planned by newly formed public power group

Mountain States Power Co's territory in Oregon's Willamette Valley is the target for public power advocates in six counties who are forming a new peoples utility district. Spokesmen for the Willamette Public Power Association, organized May 4, said the question of exact boundaries will be determined in conferences of PUD officers and the Oregon Hydroelectric Commission, but indicated some cities might be excluded. Formation of the district will require a vote of the people involved.

Six Counties Involved . . . Organization of the Association started after an April public meeting sponsored by the Linn County Farmer's Union and attended by farm and labor group representatives of Marion, Linn, Benton, Yamhill, Polk, and Lane Counties. These counties lie in the middle and upper Willamette Valley and are now served primarily by Mountain States Power Co and Portland General Electric Co. Two of the counties Polk and Yamhill, were among seven that were included in a 1938 plan for what was to be the "Northwest Oregon Bonneville Peoples Utility District," but failed to receive enough votes. The Oregon Grange was behind the 1938 plan, the most ambitious ever proposed in the state outside Portland.

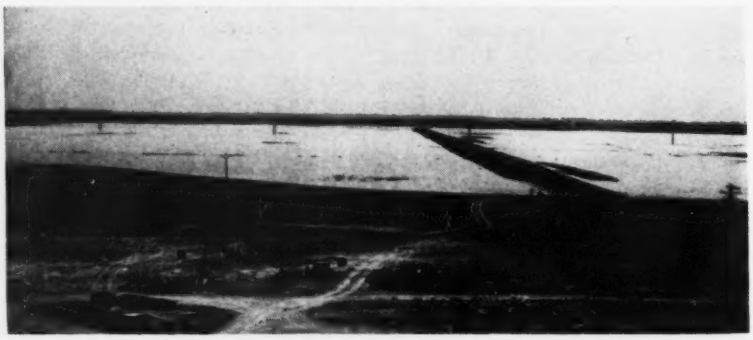
In 1940, another ballot proposal to form a Portland PUD also lost. Since then, the public power movement in the Willamette Valley, the most populous region of the state, has been dormant.

Gus Norwood, executive secretary of the Northwest Public Power Association, warned the new Oregon Association boosters they cannot rely on public resentment over the 11 to 20% surcharge levy as a primary reason for reviving PUD activity. There are broader issues, he said, such as the political influence private utilities exercise in Oregon.

Steering Committee . . . The newly formed association picked four members for its steering committee at the May 4 session. Elected were: W. W. Abraham, Shedd, who was chairman of the initial 14-member policy and fact finding committee named in April prior to association organization; D. P. Laren, Springfield; George Tate, Stayton; Oscar Kendall, Corvallis. A fifth member will be elected later.

The PUD would like to take over territory served by the Willamette Division of Mountain States Power, which operates widely separated facilities in Oregon, Idaho, Montana, and Wyoming. Presumably, the proposed PUD would omit Mountain State's Willamette Division areas in Tillamook County in Oregon's coastline, connected with its Willamette Valley properties only by circuits of the Bonneville Power Administration. The company also operates in Coos County on the Oregon coast. The cities that might be excluded would include Springfield, which has a municipal system; Albany, the company's headquarters city; Corvallis and Lebanon, where the voting climate might not be considered favorable.

Mississippi P&L's Delta Plant . . .



. . . to Get Water from Artificial Lake

Instead of building the conventional cooling towers at its new Delta Steam Station now under construction (top photo), Mississippi Power & Light Co is creating an artificial lake to take care of the plant's water needs. Plant, located near Cleveland, Miss., will have two 105,000-kw units.

The man-made lake (lower photo) will be a mile square and have a depth of 12 ft. The lake, which already is filled to a 3-ft depth, will get water from two wells and the nearby Sun River. A breakwater will be constructed out into the middle of the lake to force circulation of the water.

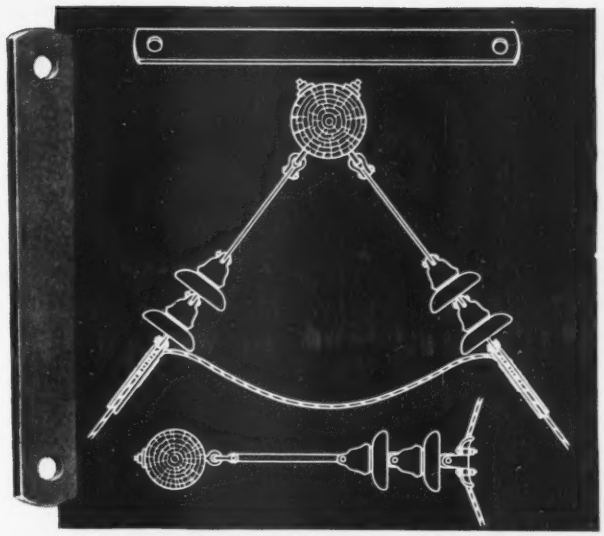
Delta Station's first unit is scheduled to go on the line at the end of October 1953.

LINE CONSTRUCTION BLUEPRINTS

HOW SOME UTILITIES ARE MAKING CONSTRUCTION WORK EASIER . . . IN WAYS THAT MAY BE HELPFUL AND USEFUL TO YOU.

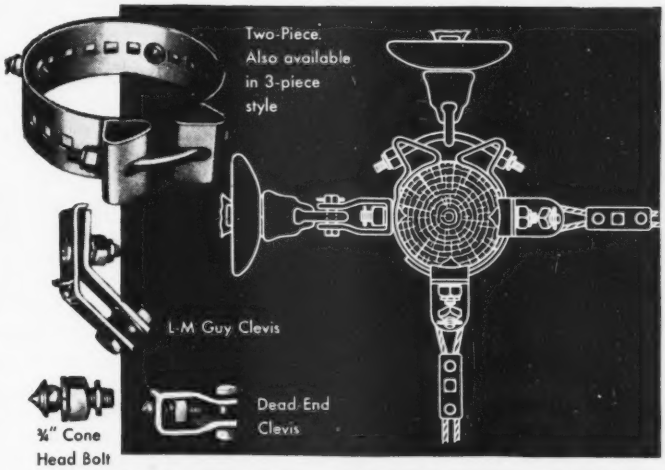
L-M EXTENSION LINKS

For safety reasons, more and more extension links are being used to obtain greater clearance from pole or crossarm to the insulators at primary dead ends. The links are attached to the wood member with an eye bolt and shackle. L-M extension links are available in a wide variety of sizes to meet any desired application.



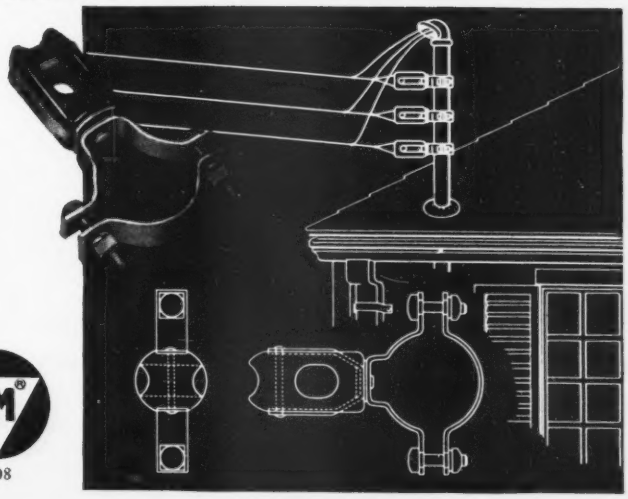
L-M POLE BAND and ATTACHMENTS

An improved galvanized steel (3/16″ x 3″) pole band for guying and dead ending. One of the advantages of this style band is that dead ends and guys may be attached at many different angles. Even under extreme load its strength does not depend on the strength of the welds. Two sizes, adjustable for 6 to 10 inch poles, and 8 to 15 inch poles. Choice of fittings. The ¾ inch curved bolt also can be used for attaching dead end fittings.



HANDY SERVICE ENTRANCE BRACKET FOR LOW-ROOF RANCH HOUSES

To assure required clearance for service drop wires on low ranch houses, the service entrance conduit frequently extends above the eaves of the roof. When 2″ or 2½″ conduit is used as a mast in this type of installation, this bracket provides a sturdy yet inexpensive method for dead ending the service drops. Catalog Number BPA43E1.



Do you have a line construction problem? These are just a few of thousands of L-M line construction specialties. If you have a line construction problem, let us know. We may have standard or special items in stock that will solve it. Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

LINE MATERIAL

Line Construction Materials

Complete Coordinated Equipment for Distribution Today

108

Harvey Prine gets ready to crate the 100,000th Kyle Type H Recloser as it comes off the production line. This recloser will be displayed at various L-M and industry meetings.

Alice Flancher, Inspector, is testing springs. "We give every spring an over-tension and under-tension test. One of our suppliers didn't see how we could be so accurate, till he saw the testing machines we designed ourselves. Now he's building one like it. These springs are important to the recloser's operation. I'd sure hear about it if I let a bad spring slip past."

100,000th Kyle® Type H Recloser Comes Off The Production Line

"I guess we at Kyle ought to know something about reclosers. We've made so many of them."

by **OSCAR HANDBERG,**
Foreman,
Assembly Department,
Kyle Products Plant,
Line Material Company

I'd like to tell you why you get so much more value in a Kyle Recloser. That value consists of a lot of big and little things.

First, our engineers have more recloser experience. More experience working in the laboratory, and working with you, on your lines.

Second, there's the company's reputation. We're pretty conservative on ratings, on design. Just "commercially acceptable" doesn't go around here. Every piece of our apparatus has to be *right*.

Third, and most important, is the spirit and pride of the men and women who make Kyle Reclosers. You'd be surprised at how much interest there is, all along the line. Most of our people have a pretty good idea of what a Kyle Recloser does, and what can happen if it should fail. So we have very, very few failures.

Our people want their jobs to pass the plant inspections, sure. But they also want our reclosers to pass the real tests—the tests of shipping and handling, and of bad weather and long years of service.

I guess we at Kyle know something about reclosers. We've made more than a hundred thousand of the Type H alone. That's in addition to the other models, and Sectionalizers and Oil Switches.

We know that you, the customer, are the real boss here. And we feel you appreciate the care and the pride of workmanship that goes into every Kyle Recloser.

Kyle Reclosers provide complete, coordinated automatic protection, from substation to load. Kyle Reclosers have many convenience and safety features. There is a full line of single- and 3-phase Kyle Reclosers, for pole and substation mounting, up to 100,000 kva and 6000 amperes interrupting rating.

For full information about Kyle Reclosers, ask the L-M Field Engineer. Or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

Bob Bocock, Coil Winder: "I've been winding coils for a long time. You've got to be sure to have the right number of turns on every layer, and the right number of layers. If I didn't do that, the rating would be off, and Jimmy Hall would rib me for weeks. If we nick the insulation or find a bum spot in it, we just toss it out and start over. No use taking chances on a swell piece of apparatus like this!"

Ed Steele, Final Assembler: "Oscar Handberg, my boss, tells me I've assembled more than 85,000 reclosers. I'm proud of them, too. We are all inspectors as the job progresses. Everyone has gotten into the habit of giving a visual inspection to parts as we use them—that cuts rejects to practically nothing, and we know utility men can sleep nights because Kyle Reclosers are on the job."

George Humsic, Grinder: "I'm grinding trip pistons on this centerless grinder. They fit into the hydraulic frames Lloyd Willms is boring. They've got to have a good finish. If they're rough, they might stick and the recloser might not operate as it should. That could be bad. This is a pretty nice machine. We can hold to two ten-thousandths of an inch tolerance. The pistons will get two more checks along the line. So we know they'll fit."

Lloyd Willms, Lathe Operator: "I've just bored and reamed this frame. This Sheffield air gauge checks tolerances down to less than a ten-thousandth. If one of these bores is a little undersize, George's pistons won't fit. If it's oversize, the recloser won't work right —and Jimmy Hall would catch it on final test. But with all the checking we do, there's very little chance of a bad part ever reaching final assembly."

Harold Murphy, Assembler: "This is the hydraulic frame Lloyd just bored, and I assemble it with the piston George has been grinding. One thing that helps is the way we rack these parts to protect them during handling. This mechanism is simple but we sure are careful about dimensions. If we weren't, some day the wrong recloser might lock out when it wasn't necessary. You just don't get careless on *this* job!"

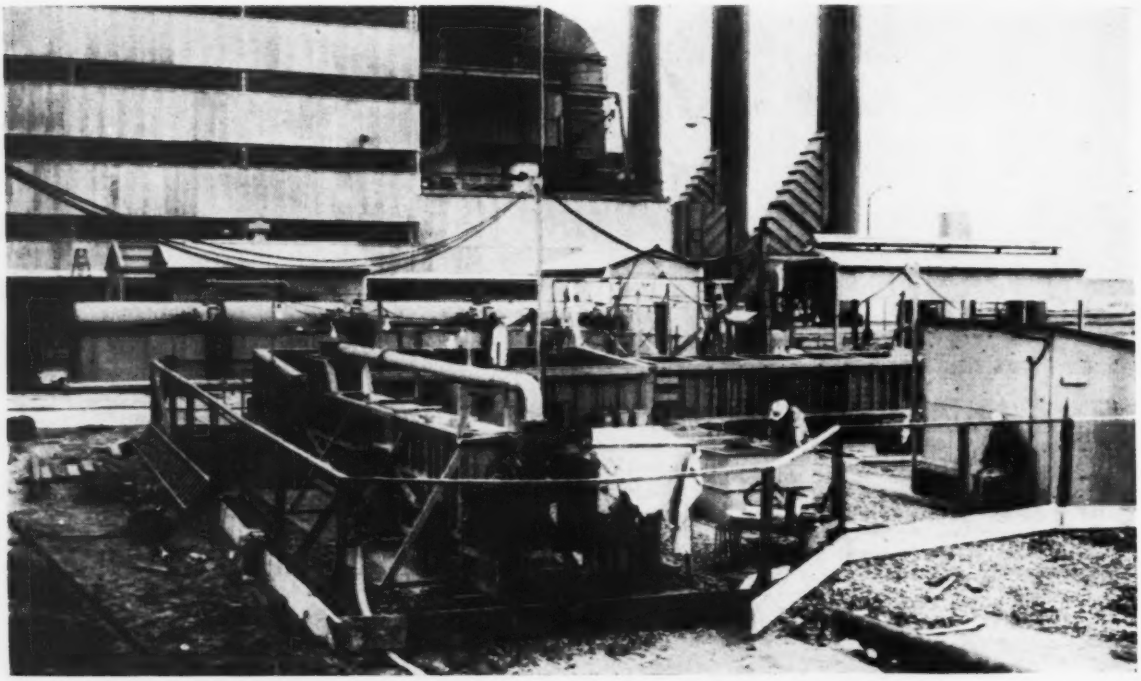
Jim Hall, Tester: "I guess I am the final word—after Ed has put the recloser together in final assembly, it comes to me and I test it for calibration. The timing of the Kyle Recloser is in the hydraulic system, so after I have made sure of this calibration there is really nothing that can happen to it to change its timing. Believe it or not, in 100,000 reclosers, we have never heard of a part in the hydraulic timing system wearing out. I guess that must be because they all work under oil."

LM®

LINE MATERIAL

Kyle® Reclosers

COMPLETE COORDINATED AUTOMATIC PROTECTION FROM SUBSTATION TO LOAD



RESEARCH CONDUCTED HERE led to development of the fish collector which will save the lives of millions of fish each year and save the fishing industry thousands of dollars. In background is the Contra Costa Plant. Research apparatus in foreground has been cleared away.

Bringing Fish Out Alive Is Easy . . .

. . . at Contra Costa Plant where research led to installation of a collector to rescue those trapped in intake screen wells

The Contra Costa steam plant of Pacific Gas & Electric Co is no longer a menace to the fish who enter its cooling water intake system. This should be good news for the striped bass, king salmon, shad, catfish, sturgeon, smelt, carp, perch, and flounder which are found in sizable numbers in the San Joaquin River on which the plant is located.

Research on protecting the fish began in 1951 when it was discovered that thousands were being killed in the intake system. After 18 months and $160,000 the study by company and Bechtel Corp experts produced a fish collector that saves at least 98% of the fish which otherwise would be trapped in the screen wells. It is also believed that 95% or more of the fish passing through the traveling screens and condenser survive.

Under full load conditions Contra Costa uses about 400 million gal of water daily. Consequently, thousands of fish of all sizes find their way into the cooling system through two 400-ft, 12-ft diameter intake pipes. As the first step in the project, three objectives were laid out. These were to determine the:

1. Most effective method of preventing larger fish from getting into the intakes.

2. Most effective method of rescuing fish trapped by screen wells.

3. Effects of temperature rise and water flow conditions in condensers on fish passing through the screens.

Screening to keep the fish from entering the intakes was soon abandoned. Fish and debris clogged the screens and imperiled plant operation. When tests proved fishes over 10 in. long could swim in and out of the intakes, the problem was reduced to eliminating fish under 10 in.

These entered the intakes, proceeded as far as the traveling screen wells, and were trapped. Finally when they were exhausted or died, they were caught on the screens, carried out of the wells, and washed back into the river. The trouble was all these fish were dead.

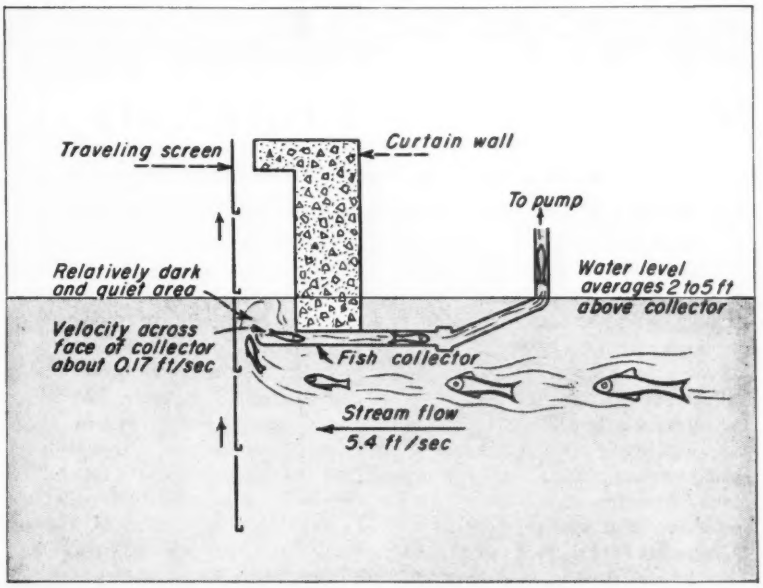
A hydraulic educator was tried. This proved unsuccessful. So to save as many fish as possible while the study continued, the company tried hand dipping. This worked but was costly. Two men with hand nets were stationed at each well at all times. Later a mechanical dipper was installed. Finally the fish collector was devised.

This device consists of a triangular, pan-like steel box, about 6-in. deep. It is covered except for a 13-in. wide slot along the 11-ft long main edge. The box decreases uniformly from the trough-like front to an 8-in. neck at the back. An 8-in. pipe connects the neck to a trash-disposal, vertical pump of the bladeless impeller type. It is capable of passing a 5-in. diameter solid. The pump discharges into a larger pipe line which empties into the river.

The collectors are suspended horizontally in screen wells just in front of each traveling screen and just below a concrete curtain wall. Collectors are normally under 2 to 5 ft of water.

Collector Takes Advantage of Fishes' Habits . . . Design of the collectors is based on facts about fish habits determined by the study. It was found fish instinctively avoid areas where the water velocity suddenly increases. They tend to congregate in areas that are dark and quiet relative to surrounding waters. The concrete curtain wall attached to the ceiling and projecting below the top of the water, provides this dark and quiet area. Here the fish congregate and soon find their way into the collector. From here they are carried along by the low-velocity trash disposal pump and discharged safely into the river.

In February, 1952, the first collector was installed. It proved so successful that now all screen wells have them. They are in continuous operation.



SIDE-VIEW DRAWING shows relative location of the components of fish collecting system

Condenser Trip Won't Kill Fish . . . A portion of the research project was devoted to determining the effects upon fish small enough to pass through the traveling screens and then through the condenser. Temperature rise and temperature tolerance tests provided these results:

Striped bass can stand a 16-deg temperature rise with only 5% mortality while king salmon can withstand as high as a 25-deg increase with no mortality whatever. But for a 26-deg rise salmon mortality is 25% and goes up steeply to 90% for a 27-deg rise. Maximum temperature tolerance for salmon is 83 deg, for bass 90 deg.

These tests were conducted by placing fish in heated tanks from lower-temperature holding tanks for 10-minute periods. After the tests the dead fish were counted, and all live fish were returned to the holding tanks and observed for indications of injury.

Conclusions drawn from these tests were verified by isolating tubes in the condensers and passing fish through them under conditions of full load. Maximum temperature rise of cooling water at Contra Costa is 16 deg for full load conditions. Maximum water temperature in condensers is normally less than 83 deg. Time for water to travel from the river, through the condensers, and back to the river is only 3 minutes.

It was found that 95% or more of the fish which pass through the entire cooling system will survive. As Contra Costa is not operated at full load continuously, the 95% survival rate might be considered conservative.

FISH APPROACHING from the river get this view of the bottom of the fish collector

Still other tests dealt with stratification of fish in the river and screen wells and use of electric screens to discourage entry. While there was stratification in some areas, in general fish were found equally dispersed at all levels. This was attributed to two tidal actions per day. Electric screens of standard design were found ineffective for two reasons:

1. The wide variety in species and sizes of fish.

2. The constant fluctuation of salinity of the water because of the tides.

MEETING REPORT

More Exact Load Forecasts . . .

. . . will be made possible by improvements in weather prediction techniques, EEI Electrical Equipment Committee is told

Improvements in daylight measuring equipment and progress in meteorology will someday allow utility engineers to anticipate daily load curves several days in advance and within limits narrow enough to make the effort worth while. This prediction was made recently before the spring meeting of the Electrical Equipment Committee of the Edison Electric Institute at Raleigh, N .C.

Forecasts Engineer Atherton Thomas and Analyst J. J. Drummon reported that Consolidated Edison studies of secular trends of load and weather have already shown what combinations of darkness and temperature are likely to occur during each season of the year, and which combinations effect system peak loads. For instance, although peak load increases on the Con Edison system for 1951 over 1950 amounted to 146 Mw compared to 51 Mw for 1952 over 1951, growth in both years approximated 100 Mw when adjusted to comparable weather conditions.

Projection of Past Peaks . . . A mathematical projection of past peak demands is used by Illinois Power Co, to estimate future system demand, W. D. Johnson told the EEI Committee. Load on the system has been growing at about 50 Mw per year. From 1945 to 1952 peak load has grown from 236 Mw to 479 Mw while generating capability has increased from 15 to 93% of peak demand.

Like Illinois Power, the Niagara Mohawk Power Co uses a statistical method of forecasting future load but according to H. L. Harrington the company does not believe any specific period of years can be used to establish a trend line. Niagara Mohawk load forecasters relate their predictions to the classical "S" curve of growth on semi-log paper. Harrington said a 12% reserve should be enough to handle forced outages and maintenance on the up-state New York system. In 1952 system generating reserve amounted to 270 Mw.

Several committee members challenged Harrington's position that utility growth could be related to the classical "S" curve as a trend line. John Lewis, Connecticut Power Co pointed to the "social revolution" of the early 1930's as altering the long-time trend of utility growth. Today output is running 30% above a trend line based on long-time data, he said, in urging that only the last 20 years be used to forecast trends.

Progress on Standards . . . Members of the Synchronous Machinery Subcommittee of ASA C-50 reported progress toward new standards of temperature measurements for hydrogen-cooled machines. He said the working group is in agreement on principles but not on numbers. Some points of agreement on basic philosophy are these:

1. Standards should be limited to conventional hydrogen-cooled generators

2. Principles are based on constant cooper temperature independent of load

3. For a given quantity and temperature of cooling water, incoming cold gas temperature (now limited to 40C) tends to rise with load.

Water Roars over McNary Spillways

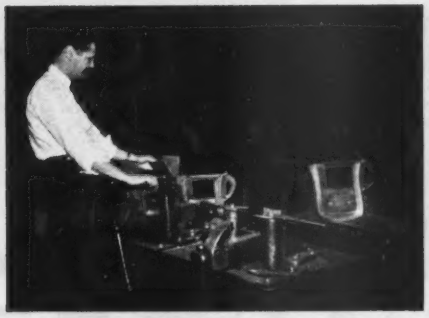
Delayed snow melt poured into Columbia Basin rivers late last month and the region's vast reservoirs began filling up. Above picture shows Columbia River flow pouring through McNary Dam spillway gates on April 23. First water splashed over 24 hours after powerhouse gates were closed, while a retarded spring runoff began moving mountain snowpack toward the Pacific, ending the storage draft power generation season in the area. McNary pool surged to the 310-ft level on April 25.

Although the forecast still reads "slightly below normal," water and power outlook has brightened. For the second time on record snowpack showed an increase in April, and general rains fell in late April and early May. Spring stream flow on the main stream of the Columbia is expected to be lowest in eight years, but runoff for the entire season will be 90% of normal.

HOW KUHLMAN BENT IRON CORES ARE MADE

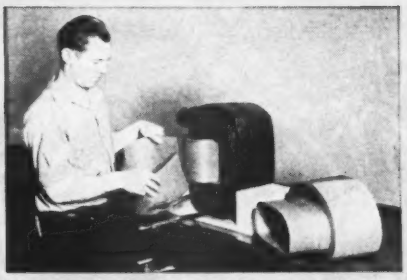
By way of celebrating a 20th anniversary, this brief picture-story shows the present-day manufacture of the now famous Kuhlman Bent Iron Core. The patent on this efficient core, (no. 1,933,140) was granted in 1933—yet so advanced was its design that today its essential characteristics remain the same and have influenced the design of many makes of transformer cores.

First, the laminations are cut to size and stacked. The operator clamps the stacks onto a hydraulic folding machine which bends them over a form into a U-shape. Before removing the pressure, the operator applies a clamp to the laminations to hold them in place.

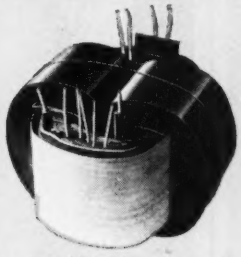


Another operator completes the bending by overlapping each alternate lamination. Levers on each side of the vise hold down each lamination as it is folded into place. The inner laminations have been cut shorter so that the outer ones will overlap.

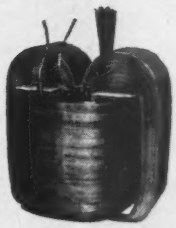
After the cores have been bent they are bound with wire and annealed to relieve the stresses caused by bending. Here are two annealed Bent Iron Cores next to the coil to which they will be assembled.



The assembler has disassembled a core and is now filling the coil lamination by lamination. The laminations retain their shape because they have been annealed. As soon as he has assembled a core to the other side of the coil, he will bind the whole assembly tightly together.



Here is a completed Bent Iron Core and coil assembly. The four air gaps of the old butt type core have been reduced to two, and the magnetic flux will always flow parallel to the grain of steel, never crossing it.

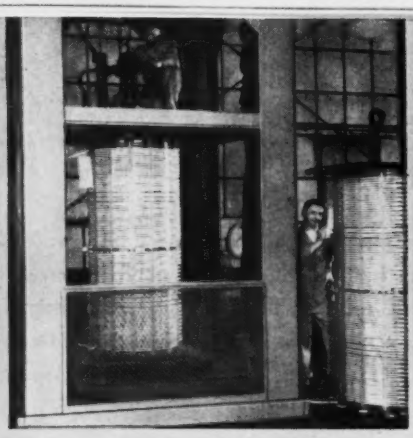


This is a recent variation of the Bent Iron Core, known as the BIE. Notice that the laps are at the top rather than at the sides. This allows for the manufacture of Bent Iron Core transformers of higher KVA rating without increasing the overall size of the transformer.

136

Kuhlman ELECTRIC COMPANY, BAY CITY, MICHIGAN
CRYSTAL SPRINGS, MISSISSIPPI

EXPORT REPRESENTATIVES: *International Standard Electric Corporation,*
50 Church Street, 15th Floor, New York 4, New York. Cable Address: Microphone, N.Y.



1 **LOW THERMAL GRADIENTS** and high insulation strength are assured by well-designed duct system which provides free circulation of insulating and cooling medium in the coil assembly of Allis-Chalmers power transformer.

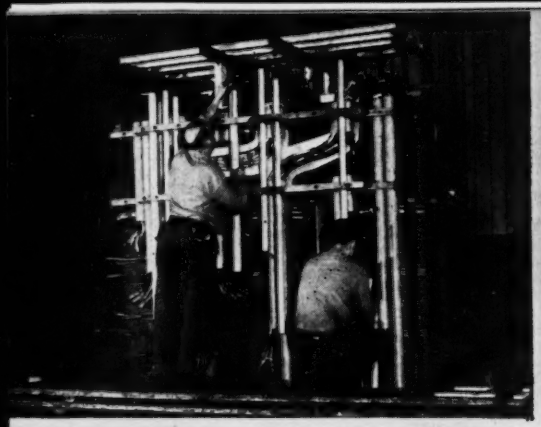
2 **PRE-COMPRESSED COIL STACKS** give added strength. Special press compresses high voltage coil stacks to exact dimensions to withstand the maximum short-circuit forces which may occur in service.

3 **PATENTED LOCKING ARRANGEMENT** keeps coils in perfect alignment after they are guided into place, holding them uniformly and permanently spaced with regard to insulation barriers and each other.

ALLIS-CHALMERS
POWER
Transformers

5 REASONS

Transformers



4 **EXPERIENCED ASSEMBLYMEN,** like those above, take extreme pride in their workmanship. The result is a transformer of high quality and excellent appearance. In the operation shown above, high insulation strength and excellent support of leads are being attained through use of machine wound tubes anchored by maple supports bolted to the side frames.

5 **MODERN TEST EQUIPMENT** checks transformer performance against design specifications after all manufacturing operations are complete. All tests are made in strict compliance with NEMA and ASA standards. As a result of all these special processes and necessary test equipment, you can expect the longest possible transformer life with minimum maintenance costs.

WHY *Last Longer*

REAL COST of any equipment is the initial price *plus* the upkeep. When you buy a transformer, you want assurance in advance that its operating life will be as trouble-free as possible. That's where the five points shown above come in. They give you some of the reasons why you can count on Allis-Chalmers power transformers for dependability.

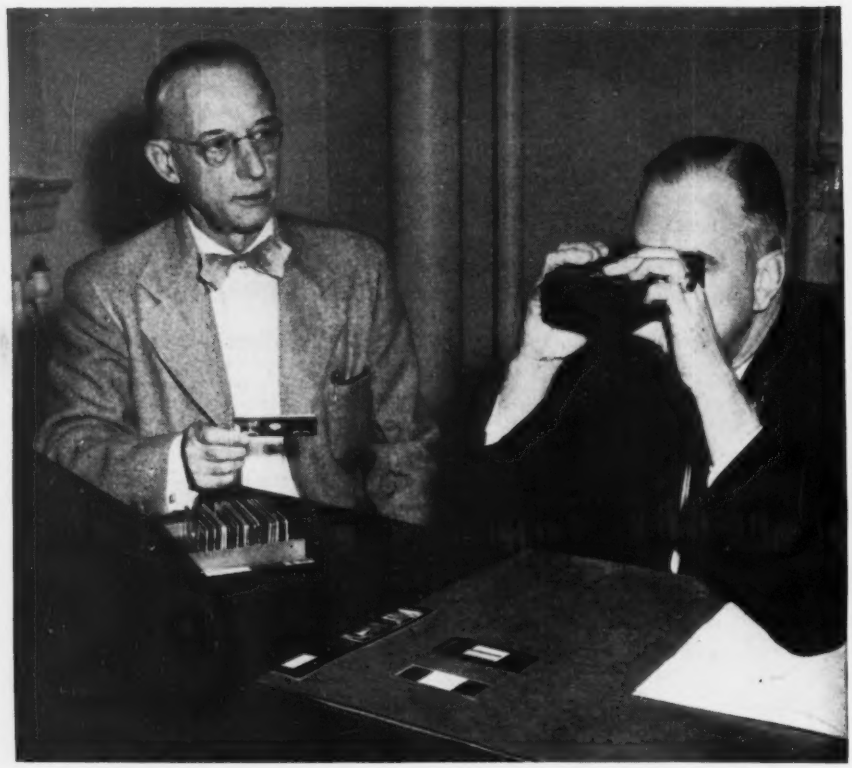
For more than half a century, Allis-Chalmers has been developing the special equipment and processes as well as a seasoned team of craftsmen for building transformers that provide maximum reliability through many long years of service. All this adds up to assurance that with an Allis-Chalmers power transformer on your system, you will be able to hold upkeep costs to a minimum.

These unique devices and special processes are just a few of the reasons it will pay to investigate Allis-Chalmers design and construction when you consider your next power transformer. A-4071

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

Milwaukee 1, Wisconsin



Individually . . .

Or in groups . . .

Boston Edison Customers Get A

Using stereo slides gives a more accurate picture of the nature of new lighting installations, utility finds

R. B. BROWN, JR., Boston Edison Co, Boston, Mass.

WILLARD ALLPHIN, Sylvania Electric Products, Inc., Salem, Mass.

A lighting salesman, if he could, would like to take a prospect by the hand and lead him to good examples of the type of installation under consideration. This is seldom feasible, so excellent substitutes are colored three-dimensional slides, the reality and novelty value of which more than make up for the lack of direct physical demonstration.

Operations by Boston Edison Co and Sylvania Electric Products, Inc. typify how utilities can use 3-D photography to advantage. Where solicitation of one or two prospects is involved the stereo slides are shown in hand viewers. Where pictures are to be shown to a group, a stereo projector is used and the audience views a screen through Polaroid spectacles.

Boston Edison has constructed an adaptor so that one-half of a stereo slide can be used in a standard projector, but this method is not recommended because of the loss of the three-dimensional effect. In the future more use will be made of the stereo projection technique.

Two Methods . . . Sylvania uses two principal applications of stereo photography: plant tours and lighting installations. A training course held monthly at Salem and Ipswich, Mass. for distributors' salesmen used to include a tour of the fixture plant. Now that the plant is in Wheeling, W. Va., this is no longer practical, so it is now shown in projected stereo slides.

There are some advantages to this method. The group is kept together, the "tour" can be made at any time of day, and close-up views can be included which put the visitor nearer certain operations than he could get without interfering with production.

The application slides are carried by all division engineers and many salesmen and are shown to prospects with a hand viewer. Among types of installations covered are: industrial, school, office, and store lighting, so that the prospect can see a particular fixture and has a chance to find an application similar to his own.

Engineers Participate . . . All of Boston Edison's lighting engineers use the slides to stimulate customer interest in and desire for modern lighting, and

3-D View of Lighting

also to create good will with installations that have been made as a result of their recommendations. The slides are used for lectures to PTA groups and to the lighting school conducted jointly by the Illuminating Engineering Society and the Electric Institute of Boston.

The slides are particularly effective when recommending some of the newer types of lighting equipment, such as troffers, lens plates and various other forms of recessed or built-in equipment. Many customers are unfamiliar with such equipment and the slides make it unnecessary for the customer to leave his premises to visit other installations.

In one case, a manufacturer engaged in planning a wholly new manufacturing area was assisted materially in arriving at a more efficient arrangement of machinery for his own plant after viewing stereo slides of other factory spaces.

Color Helpful . . . Fact that the slides are in color is, of course, valuable in illustrating what is meant by quality of lighting, particularly the reflectance and color of walls, ceilings, floors, and furniture. It has been difficult, for example, to get across the necessity for lighter finishes on floors, furniture, and machinery. While these effects can be shown in ordinary colored slides, the realism afforded by three-dimensional pictures confirm the validity of any claims made by the lighting engineer.

Oftentimes, there is an opportunity to take pictures before and after the installation is made. Showing these in sequence emphasizes to the customer the improvement that has been made.

All in all, even without leaping lions and careening airplanes, as one Boston Edison official puts it: "Stereo slides tell a convincing story." That's the pay-off in selling.

New Fat Fryer . . .

. . . developed by Hotpoint Co includes semi-automatic fat changeover and most powerful heating element

The Mark 313, a new deep-fat frying machine produced by Hotpoint Co that turns out 313 2-oz servings of french fries per hour in 28 lb of fat, was unveiled this month at the annual convention of the National Restaurant Assn. in Chicago. The machine has a production rate more than double that of most conventional fryers, semi-automatic fat changeover, self-cleaning, 5-minute preheat, and, for the first time, virtually instantaneous temperature recovery.

It is equipped with such refinements as a tilt-type heating element that swings upright, a removable fat compartment that lifts out by means of convenient handles, a roller-bearing drawer that stores a reserve fat container, "Miraclean" drain-and-strain apparatus, with signal lights, plus the most powerful Calrod heating element ever built.

An entirely new system of draining and straining fat brings semi-automatic convenience to tasks of fat changeover and kettle cleaning. Fat is drained and strained through a washable filter bag, into a reserve fat container.

The main fat compartment then can be lifted out and washed like an ordinary kitchen utensil, while the reserve compartment into which the fat was filtered is ready for immediate use.

More State Labor Control . . .

. . . is being considered on Capitol Hill. Several bills would amend Taft-Hartley to permit more local regulation

There is serious talk in Washington of reversing the trend of the past 20 years toward increasing federal control of labor problems. This is important for management and unions alike because of the crazy-quilt patchwork of labor laws in many states and the absence of laws in others.

State Laws in Conflict with T-H . . . Most of the important state labor legislation has gone on the books since the Republican election victory in 1946. But because of conflict with the Taft-Hartley law, many have been nullified.

The Supreme Court, for example, set aside a Michigan law requiring a vote of employees before a strike can be legal and a Wisconsin law requiring arbitration of utility disputes. In Missouri and Florida, state officials have taken cognizance of those decisions and have put their laws on the shelf for the time being.

There is a strong move in Congress to put life into existing state laws and to stimulate more states to get deeper into the labor field. It shows up in two proposed amendments to Taft-Hartley. The Goldwater-Lucas bill would permit states to regulate picketing and strikes irrespective of any conflict with Taft-Hartley. This bill already gives precedence to 13 state laws (12 enacted since 1947) forbidbing any form of compulsory union membership, and there is a counter move on labor's part to try to get Congress to remove this concession to the states.

Another Bill . . . The other is the bill by Sen Alexander Smith to remove from the area of interstate commerce —and thus subject to state laws rather than Taft-Hartley—all businesses employing less than 10 workers, all local public utilities and local construction projects, and all business doing a small amount of business in interstate commerce (EW, May 11, p 34). This bill alone would eliminate about 40% of the work now done by the National Labor Relations Board. About one-fifth of the cases handled by NLRB involve employers of less than 10.

Another bill in this direction has the support of the NLRB itself. It would permit NLRB to cede jurisdiction over local enterprises, like retail stores, to state labor boards, which operate in 11 states. NLRB has not been able to do this under Taft-Hartley because it is permitted only where a state has a law consistent with Taft-Hartley—and no state has such a law.

In the box at left is a rundown of state labor laws and what they provide.

Present State Labor Laws

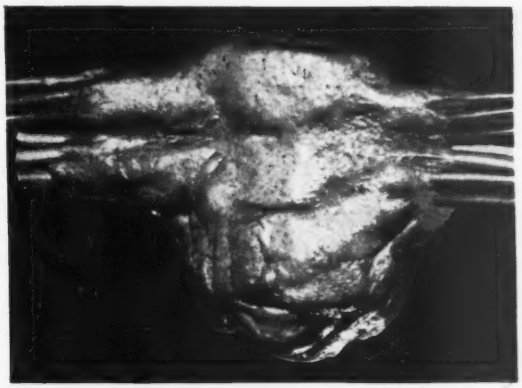
State	Ban Compulsory Unionism	Restrict Picketing	Curb Boycotts	Limit Strikes	Public Utilities Curbs
Ariz.	Yes	Yes	No	No	None
Ark.	Yes	Mass Only	No	No	None
Calif.	No	No	No	Jurisdictional	None
Colo. (a)	3/4 vote	Before Strike Vote	Yes	Strike Notice and Vote	None
Conn. (a)	No	Of Homes	No	No	None
Fla.	Yes	To Dispute Area	No	Jurisdictional and Strike Vote	Arbitration
Ga.	Yes	Mass Only	Primary	Notice	None
Ind.	No	No	No	Utilities	Arbitration
Iowa	Yes	No	Yes	Jurisdictional	None
Kan. (a)	Majority Vote	To Dispute Area	No	Jurisdictional and Strike Vote	Arbitration
Mass. (a)	No	Of Courts	Partly	Jurisdictional	Seizure
Mich. (a)	No	Yes	No	Jurisdictional, Notice and Vote	Arbitration
Minn. (a)	No	Yes	Yes	Jurisdictional and Vote	Fact-Finding
Mo.	No	No	No	Utility	Seizure
Neb.	Yes	Mass Only]	No	Utility	Arbitration
Nev.	Yes	No	No	No	None
N. J.	No	No	No	Utility	Seizure
N. Y. (a)	No	No	No	Government Employees	None
N. C.	Yes	No	No	No	None
N. D.	Yes	Before Strike Vote	Yes	Vote and Notice	Seizure
Pa. (a)	No	By Non-Employees	*Yes	Jurisdictional and Utility	Arbitration
S. D.	Yes	Yes	Farm Products	No	None
Tenn.	Yes	No	No	No	None
Tex.	Yes	Yes	Yes	No	Picketing
Utah (a)	No	Before Strike Vote	Yes	Strike Vote	None
Va.	Yes	Yes	No	Government Employees	Seizure
Wis. (a)	2/3 Vote	Yes	Yes	Jurisdictional and Vote	Arbitration

Notes—Laws in Wisconsin, Michigan, Florida, Indiana, and Missouri have either been invalidated or are not being used because of conflict with Taft-Hartley.
(a) These states and Rhode Island have laws like the Wagner Act regulating unfair labor practices.

LABOR BRIEFS

Connecticut Power Co and four International Brotherhood of Electrical Workers, AFL, locals have signed a two-year agreement on May 14 covering general wage increase of 8¢ an hour for about 400 production and maintenance workers. Company agreed to pay complete premiums for employees and dependents for hospitalization and surgical costs. Employees had previously paid part of these costs. Both gas and electric divisional employees are concerned and wage discussions can be reopened after one year.

Richard L. Rosenthal, chairman of board of Michigan Gas & Electric Co, announced that the Richard and Hinda Rosenthal Foundation, a nonprofit organization, is establishing a program of scholarship awards for high school graduates wishing to pursue education at higher levels. The scholarship awards are available only to the children, brothers and sisters of Michigan Gas & Electric Co employees. Several awards will be made for the 1953-54 academic year ranging in amounts from $200 to $500 each. Announcement of awards for the 1953-54 school year will be made between Aug. 1-15, 1953.



ARE *YOUR* CONNECTIONS

AMONG THE THOUSANDS ALREADY PROTECTED

FROM OXIDATION AND CORROSION BY

KEARNEY AIRSEAL?

Today thousands of tight, high-conductivity connections are proof of how KEARNEY Airseal has stood the test of time. Utilities everywhere have discovered that inexpensive pads of Airseal, kneaded over connectors and terminals, completely and permanently seal out air and moisture.

Field experience has shown that Airseal remains pliable and tight-sealing in every kind of weather, in temperatures ranging from —50°F. to 250°F. Yet it is easy to remove, when necessary, simply by peeling off. Airseal never sticks to hands or gloves.

Airseal's extremely high dielectric strength (280 volts per mil.) makes it a dependable insulator on terminals and other connections where safety is a factor.

For fast, easy and economical use on the job, KEARNEY Airseal is supplied in pads 2½" x 2", 4" x 2½" and 8" x 8"... also in 10' rolls 2½" wide and 4" wide.

Write for complete technical data and prices

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233

For Better Construction . . . For *SAFER* Maintenance!

DISTRIBUTION TRANSFORMERS
different from others because.....

.....Nitrile rubber gaskets at all tank openings prevent breathing...seal out contamination

You get years of extra service from your General Electric Spirakore* distribution transformer because "we stopped their breathing to prolong their life." **EVERY OPENING**—cover, handhole, high- and low-voltage bushings—is sealed with a nitrile rubber gasket. These gaskets resist oil, sunlight and atmosphere . . . they require no cement . . . are easily removed *and used again and again.*

This air-tight seal maintains the high dielectric strength of the oil . . . prolongs the life of the insulation.

REMEMBER . . . all transformers are not alike . . . compare the General Electric plus features in the chart below and see for yourself.

For more information on distribution transformers, either unit-type or conventional, contact your nearest G-E sales office, agent or distributor, or write to General Electric Company, Section 431-5, Schenectady 5, New York.

*Registered trade-mark of General Electric Co.

You can put your confidence in—

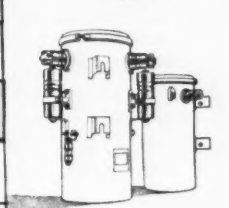
GENERAL ELECTRIC

ALL TRANSFORMERS ARE NOT ALIKE

(make this simple comparison and see)

FEATURE	General Electric	Mfr. A	Mfr. B	Mfr. C	Mfr. D	Mfr. E
Production-line impulse testing	YES	NO	NO	NO	NO	NO
Nitrile rubber gaskets at all tank openings	YES	NO	NO	NO	NO	NO
Strenicor pressure terminal clamps	YES	NO	NO	NO	NO	NO
Insulated clamp-type connectors on tank wall hv bushings	YES	YES	YES	NO	YES	YES
One-piece cover band	YES	NO	NO	NO	NO	YES
Gapped valve-type arresters	YES	NO	NO	NO	NO	NO
Nationwide company-operated service facilities	YES	YES	NO	NO	NO	NO

1876 75 1951 YEARS OF ELECTRICAL PROGRESS



UNIT-TYPE CONVENTIONAL

"Take your choice G. E. makes both"

APPA Elects Oliver President

Group's new head manages the Taunton Municipal Lighting Plant. Pierce and Allen awarded Distinguished Service Medal

CARROLL A. OLIVER

The new president of the American Public Power Association is Carroll A. Oliver, manager of the Taunton (Mass.) Municipal Lighting Plant. He succeeds Ralph J. Duvall, manager of production and distribution for the Board of Public Utilities, Kansas City, Kan.

APPA has also elected the following officers: Executive vice president, W. E. Hooper, general manager, Sheffield Power and Water Department, Sheffield, Ala.; and vice president, Ray I. Schacht, general manager, Consumers Public Power District, Columbus, Neb. C. E. Pray, manager of collections and accounts, Bureau of Public Utilities, Kansas City, Kan., was re-elected treasurer of the association and Alex Radin was reappointed its general manager.

The association's Distinguished Service Medal was presented to A. L. Pierce, Wallingford (Conn.) Borough Electric Works, and Thomas H. Allen, president of Memphis (Tenn.) Light, Gas and Water Division.

Served as Chief Engineer . . . Oliver, who received his electrical engineering degree from Massachusetts Institute of Technology, was engaged for two years in management engineering with Stone & Webster, Inc, before going in 1927 to Blackstone Valley Gas & Electric Co to serve as distribution engineer, a post he filled for ten years. After serving as assistant manager and chief engineer with Belmont (Mass.) Electric Light Department, he went to Taunton in 1948.

During World War II, Oliver was a commander with the Navy.

•

Charles Wenner, assistant general manager of James R. Kearney Corp of Canada, Ltd, for the past two years, has been named managing director. Before going to the Canadian subsidiary, Wenner represented James R. Kearney Corp, St. Louis, for 22 years as a sales engineer in the Ohio and Florida territories.

A. H. Cauley, a staff member since 1939, has been named manager of B.A.R.C. Electric Cooperative, Millboro, Va.

Tom Stott Named VP

H. M. Harper Co, Morton Grove, Ill., has appointed Tom Stott as vice president. With the company since 1942, Stott has served as general sales manager for the past three years. As vice president, he will continue to serve in his capacity of general sales manager.

John Dawson Elevated

John S. Dawson, secretary and general counsel of Bridgeport Brass Co, has been named a vice president of the company. Dawson, who assumed the secretary's post in 1947, joined Bridgeport Brass Co in 1941. Prior to joining Bridgeport Brass, he practised law with the Hurlburt, Jones, Hall & Bickford firm of Boston, Mass.

Personnel Changes Made by Otter Tail Power Co

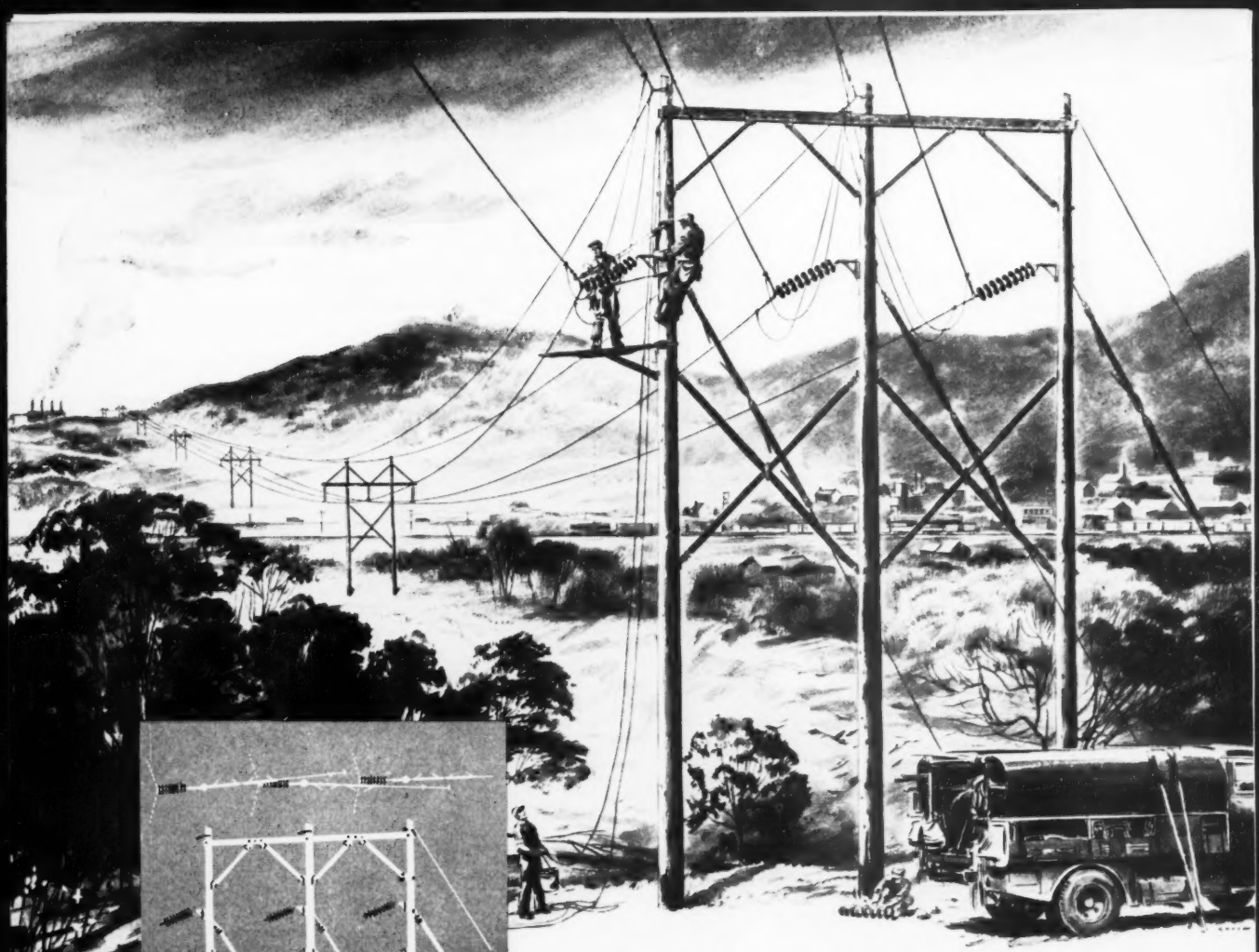
Otter Tail Power Co, Fergus Falls, Minn., has appointed four district managers, a division engineer, and an area manager.

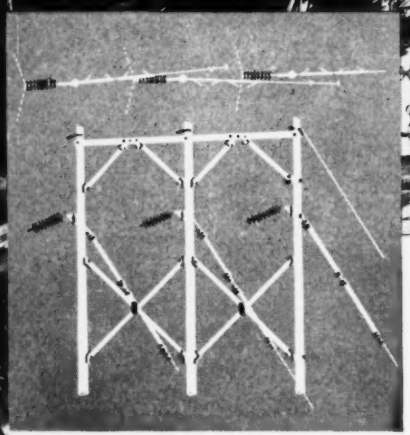
New district manager for the company's Wahpeton, N. D., district is Donald C. Lambert. Lambert, formerly district manager at Langdon, N. D., replaces C. J. Dougherty, who has resigned. Lambert's successor as manager at Langdon is Edward L. Beck, formerly district manager at Bemidji, Minn.

Melvin O. Sunby, who previously served as Bemidji division engineer at Crookston, Minn., succeeds Beck as district manager for the Bemidji district. James J. Seashore, who served with the utility's engineering department in Fergus Falls, takes over Sunby's engineering post at Crookston.

Robert W. Nygard, who was area manager for the company at Harvey, N. D., assumes the post of district manager for Otter Tail Power's Devils Lake district.

Henry Berquist, previously an inspector for Otter Tail Power, is new





Type No. 708 —
Medium Angle Structure*

Quantity	Description
2	Crossarm
3	Stud bolt ⅞" w/2 washer nuts and locknuts
2	Filler block
6	Stud bolt ¾" w/2 washer nuts and locknuts
4	Knee brace
3	Swinging angle bracket 2/plate and bolts
7	Machine bolt ⅞" w/sq. nut and locknuts
4	Flat washer 4" sq. x ¼", 15/16" hole
2	Curved washer 4" sq. x ¼", 15/16" hole
2 sets	Cross brace w/fittings, clamp, ⅞" pole bolts and curved washers
3	Pole band
3 pr.	Connecting link
1	Guy roller
1	Machine bolt ¾" x 2½"
6	Wood strain insulator
2	Suspension clamp for static wire
As req'd	Suspension insulators and fittings
As req'd	Guying material
3	Link

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How 109 Graybar Offices and Warehouses help Standard Construction Practice

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Ingenuity and skill of experienced transmission engineers speeds vital construction work ahead. And acting as local liason between them and hundreds of manufacturers are 109 strategically-located Graybar offices and warehouses.

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Sangamo J Meters

Utilities have a right to expect good service from the watthour meters they buy.

Sangamo Type J Meters give a full measure of service . . . Thirteen years of performance have proved Type J's remarkably free from bearing wear. The cobalt tungsten ball and sapphire jewels of the lower bearing, and the stainless steel pivot and bronze bushing of the upper bearing are practically unaffected by millions of revolutions.

High insulation level and surge resistant damping magnets prevent damage from lightning surges . . . High thermal rating means fewer meters burned up on severe overloads . . . Rigid mechanical construction prevents change of accuracy even under extreme vibration or temperature changes.

These are the major items that contribute to a full measure of service. You can keep operating expenses at a minimum with the *proven* J Meter.

SANGAMO
ELECTRIC COMPANY
SPRINGFIELD, ILLINOIS

Only Measured Facts are Known Facts

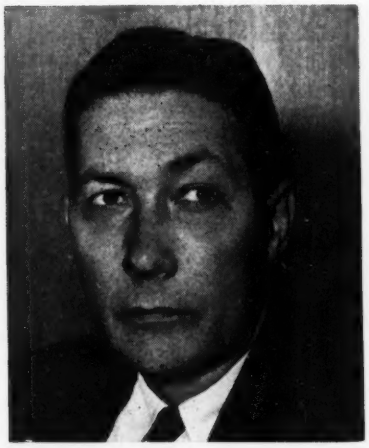
JM53-4

area manager for the company at Millbank, S. D., replacing J. G. Naseth who resigned.

•

Ary Mossiman, statistician for Electrical World since December, 1951, has been named manager, market research and statistics. Mossiman joined EW in April, 1951, as assistant editor after serving for a year with Ebasco Services, Inc, as an electrical engineer. He graduated from Pratt Institute, Brooklyn, N. Y., with an electrical engineering degree in 1950.

James K. Carr, consultant to the House Interior Committee on Irrigation and Reclamation for the past two years, will leave the committee on June 1 to become consulting engineer for Sacramento Municipal Utility district. Carr, for 15 years an engineer on the Central Valley Project for the Bureau of Reclamation, will remain in Washington temporarily for special work for SMUD with the Federal Power Commission, REA, and USBR.



GEORGE L. IRVINE

GE Names Irvine a VP

George L. Irvine, manager of agency and distributor sales for General Electric Co's Apparatus Sales Division at Schenectady, N. Y., since 1949, has been elected a commercial vice president of the company with headquarters at Dallas, Tex. He succeeds William B. Clayton, who is retiring after 48 years' service. Clayton has been commercial vice president since 1942. Irvine with GE since 1930, will be engaged in customer relation activities in his new capacity.

DuBose Appointed President

McNEELY DuBOSE

McNeely DuBose, who has been active in the management of Saguenay Power Co, Ltd, Montreal, Can., for nearly 30 years, has been named president of the utility to succeed R. F. Powell, who remains with the utility as a director.

Known for his contributions to the design and operation of hydroelectric power developments throughout the world, DuBose served as engineer on the Isthmian Canal Commission, Panama, and with the Riegos y Fuerza del Ebro, Spain, before going to Canada in 1926, when he joined the Aluminum Co of Canada, Ltd. DuBose is responsible for the major share of the planning and execution of that Canadian firm's development in British Columbia.

DuBose has served as a vice president of Aluminum Co of Canada and Aluminum Power Co, and as president and director of Saguenay Electric Co and Saguenay Transmission Co, Ltd.

Was CEA President . . . DuBose, who received his education at the University of South Carolina and North Carolina State College, is a past president of the Canadian Electrical Association. He is also a fellow of the American Institute of Electrical Engineers.

OBITUARY

J. Walter Collins, 69, executive secretary of the Electrical Contractors Association of Chicago for 40 years, died May 15. In 1947 Collins won the McGraw Award for contractors given annually by McGraw-Hill Publishing Co to the individual who contributes the most to the electrical industry.

Benjamin H. Nichols, 55, associated professor of electrical engineering at Oregon State College, died at Eugene, Ore., May 5. Besides being a member of the OSC faculty, Nichols served in an advisory capacity for the state hydroelectric and public utility commissions and Mountain States Power Co.

John S. Lapp

John S. Lapp, 74, founder, president, and recently chairman of the board of directors of Lapp Insulator Co, Inc, Le Roy, N. Y., died May 1 at his winter home in Palm Springs, Calif.

Lapp, an electrical engineer, pioneered in the development and manufacture of porcelain insulators for the electric power industry. He founded Lapp Insulator in 1916 and served as its president until a few years ago when he became chairman of the board. Lapp was a member of the American Institute of Electrical Engineers.

JOHN S. LAPP

Loftus H. Reid, 63, chairman of the Toronto Hydro-Electric Commission, died recently at Toronto, Ont.

FINANCIAL

WWP-Puget Plan Opposed . . .

. . . by Pacific Northwest public power advocates who are represented by Northcutt Ely, general counsel for APPA

Pacific Northwest public power advocates are still out to stymie the proposed merger of Puget Sound Power & Light Co with the Washington Water Power Co.

Two public power associations and five Washington Public Utility Districts last week announced they will strenuously oppose the consolidation when it comes up for approval before the Federal Power Commission.

FPC Petitioned . . . They petitioned FPC for permission to intervene at the merger hearings when they are held. No date has yet been set, but it is almost certain they will be held at Washington, D. C.

Northcutt Ely, general counsel for the American Public Power Association, is also counsel for the groups and districts protesting the merger. He filed the petitions to intervene on behalf of the Northwest Public Power Association, the Washington Public Utilities Districts' Association, and Thurston, Jefferson, Chelan, Skagit, and Snohomish Public Utility Districts.

The five PUD's are seeking to purchase Puget Power and claim the overwhelming support of Puget stockholders for this purchase.

There is the chance that the merger fight will be among the first of the controversial electric utility matters to reach FPC under its new chairman, Jerome K. Kuykendall. This makes for an ironic twist. Kuykendall gave up the chairmanship of the Washington State Public Service Commission to head the FPC.

The merger battle will be fought before both the state and federal commissions. In fact hearings were started in the early part of last week before the Washington PSC at Olympia.

Reasons for Opposing Merger . . . Petitions filed by the Northwest public power groups cited these reasons:

1. The electric utility systems of WWP and Puget Power are not physically integrated.

2. There is little reason to believe the proposed merger would increase the supply of firm power available from the newly formed company.

3. If the merger is permitted, the installation of additional generating capacity would require an increase in rates because of the debt service requirement on bonds and other obligations.

4. The merger would destroy the Puget "power pool" and disrupt integrated major generating and transmission facilities.

Offer to buy Puget for about $89 million, plus accounts receivable, other assets and improvements, was made by five PUD's in September, 1952.

The Washington Public Utility District Association has taken newspaper space to urge the public to protest to the Washington PSC against the merger. The association said that "there will be no public balloting on this issue and the only way in which you can register your opinion is to write a letter or postcard to the PSC."

An 1883 Meter Contrasts Sharply with a 1953 Streamliner

William A. Reiss, left, a stockholder and retired employee of Consolidated Edison Co of New York, is looking at a chemical type electric meter invented by Thomas A. Edison. It was used on the system from 1883 to 1897. This meter was part of a display of equipment used in the early days of the company's operations. Reiss is the only one left from the department which serviced these old meters. Mary E. Bryant, a younger stockholder, attending the annual stockholders meeting last week in New York City, is observing the chic lines of the present meter.

FINANCIAL BRIEFS

Wisconsin Public Service Corp has listed its common stock on the New York Stock Exchange . . . **Georgia Power & Light Co** directors have approved a $3-million construction budget and have voted for the sale of $2 million in bonds to help pay for it . . . **British Columbia Power Corp** is planning to sell more common stock in 1953 . . . **Federal Judge John D. Clifford,** Portland, Me., has issued a final order dissolving the American Power & Light Co under the provisions of the 1935 Holding Company Act . . . **Florida Power Corp** has received State Railroad and Utilities Commission approval to sell 80,000 shares of 4¾% preferred stock to institutions.

Lower Valley Power & Light, Inc, an REA cooperative at Freedom, Wyo., has received Public Service Commission approval to purchase the Star Valley Power & Light Co of Afton for about $285,000 and the Jackson Hole Light & Power Co of Jackson for about $310,000 . . . **Tacoma, Wash., City Light** is planning to sell $5 million in revenue bonds.

Dividend Increases—Maine Public Service Co will pay July 1 a quarterly common dividend of 35¢ a share as compared with 30¢ a share previously . . . **Duquesne Light Co** is planning to increase its quarterly common dividend to 40¢ a share as compared with 37½¢ previously.

REGULATION

Public Service Co of New Mexico's (Albuquerque) application to up rates by $990,900 a year will be heard by the Public Service Commission on July 13 instead of June 2 . . . **Rochester Gas & Electric Co** has received New York Public Service Commission approval to reduce rates about $233,400 a year in its Canandaigua, Lake Shore, and Genesee Districts . . . **Consolidated Edison Co of New York** has received Public Service Commission approval to revise rate schedules in Staten Island which will save the customers in that area about $150,000 a year. These revised schedules will have the same rates now in effect in remainder of city and Westchester County.

Today in Utility Finance

YIELDS (%)

Quality	Bonds			Preferred Stocks			Common Stocks		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
DATE									
1953									
May 14	**3.37**	**3.46**	**3.68**	**4.37**	**4.59**	**4.79**	**5.12**	**5.57**	**5.91**
May 7	3.36	3.45	3.69	4.34	4.56	4.77	5.13	5.56	5.87
END OF QTR.									
1st 1953	3.15	3.23	3.39	4.16	4.41	4.66	4.95	5.24	5.50
4th 1952	2.99	3.03	3.14	4.06	4.22	4.59	4.98	5.33	5.62
3rd 1952	2.99	3.03	3.16	4.10	4.26	4.61	5.18	5.59	5.96
2nd 1952	2.95	3.00	3.09	4.05	4.31	4.60	5.38	5.85	6.42

Data: Reis & Chandler, Inc.

EARNINGS

Company	Period Months Ended		Net Income 1953	Net Income 1952	Earnings Per Common Share 1953	Earnings Per Common Share 1952
Alabama Power	12	Apr.	$11,940,400	$11,580,316	....	....
California Electric Power, consolidated	12	Mar.	2,672,890	1,810,552	$0.87	$0.65
Central Illinois Electric & Gas	12	Mar.	1,934,070	1,814,900	2.35	2.18
Central Illinois Public Service	12	Mar.	5,565,540	4,978,230	1.56	1.47
Columbus & Southern Ohio Electric	12	Mar.	5,022,792	3,916,019	2.18(a)	2.04(a)
Public Service Co of Colorado, consolidated	12	Mar.	7,709,624	7,063,300	2.38(b)	2.15(b)
West Penn Electric, consolidated	12	Mar.	13,017,166	11,328,081	3.08(c)	2.86(c)
			1952	**1951**	**1952**	**1951**
Central Maine Power	12	Dec.	4,630,043	4,432,203	$1.48	$1.40
Frontier Power	12	Dec.	38,063	.....	0.27	....
Mountain States Power	12	Dec.	1,605,228	1,397,026	1.14	1.16
New England Electric System, consolidated	12	Dec.	9,780,147	9,653,086	1.23(e)	1.31(e)
New Jersey Power & Light	12	Dec.	1,337,084	1,393,127	....	....
Northern States Power (Minn), consolidated	12	Dec.	15,331,000	12,059,000	1.02(f)	0.85
Public Service Co of New Hampshire	12	Dec.	2,876,245	2,230,966	2.04(g)	1.98(g)
Tuscon Gas, Electric Light & Power	12	Dec.	1,301,549	945,134	2.44(h)	2.39(h)

Notes—Figures shown for last eight companies have been audited. (a) Based on 2,001,360 shares in 1953 and 1,701,360 shares in 1952; (b) Based on 2,751,128 shares in 1953 and 2,746,181 shares in 1952; (c) Based on 4,224,000 shares in 1953 and 3,960,000 shares in 1952; (e) Based on 7,901,584 shares in 1952 and 7,364,583 shares in 1951; (f) Before giving effect to accelerated amortization; (g) Based on 1,179,047 shares in 1952 and 953,064 shares in 1951, and (h) Based on 500,000 shares in 1952 and 360,000 shares in 1951.

FINANCING

Company and Description	Amount of Offering (000)	Offering Price	Yield to Public
WEEK OF MAY 14-20			
Bonds			
Texas Power & Light—1st mtg 3⅞% due 1983	$5,000	102.239%	3.75%
Metropolitan Edison—1st mtg 3⅞% due 1983	8,000	101.335	3.80
Pacific Gas & Electric—1st mtg 4% due 1984	65,000	101.78	3.90
Philadelphia Electric—1st mtg 3⅞% due 1983	30,000	102.60	3.73
SCHEDULE FOR MAY—JUNE			**Bid Date**
Bonds			
Potomac Electric Power—1st mtg due 1988	$10,000	.....	May 25
Iowa Public Service—1st mtg due 1983	7,500	.....	June 2
Arkansas Power & Light—1st mtg due 1983	18,000	.....	June 8
Consolidated Gas, EL&P of Baltimore—1st mtg due 1983	25,000	.....	June 8
Gulf Power—1st mtg due 1983	7,000	.....	June 9
Los Angeles, Calif, Department of Water and Power—revenue	5,000	.....	June 9
New Jersey Power & Light—1st mtg due 1983	5,500	.....	June 9
Pennsylvania Electric—1st mtg due 1983	12,500	.....	June 23
Preferred Stock			
Public Service Co of Indiana—600,000 sh $25 par	$15,000	.....	June
Common Stock			
Potomac Electric Power—852,840 sh (to be offered commonholders on 1-for-5 basis, record May 27 to expire June 10)	$	.....	.....
Rochester Gas & Electric—175,000 sh (to be offered commonholders on 1-for-7 basis, record May 28 to expire June 12)	.....	.....	.....
Texas Utilities—350,000 sh	.....	.....	June 2
American Gas & Electric—800,000 sh	.....	.....	June 9
New England Electric System—828,516 sh (to be offered commonholders on 1-for-10 basis, record June 11 to expire June 25; company will name subscription price on June 8 and open bids June 10 for underwriting fee)	.....	.....	June 10
General Public Utilities—568,665 sh (to be offered commonholders on 1-for-15 basis, record June 2 to expire June 24 with oversubscription privileges)	.....	.....	.....
Public Service of Indiana—472,596 sh (to be offered commonholders on 1-for-8 basis record June 2 to expire June 17)	.....	.....	.....
Gulf States Utilities	6,000*	.....	June 23
Derby Gas & Electric—47,059 sh (to be offered commonholders on 1-for-6 basis; unsubscribed to be offered to officers and employees)	.....	.....	.....
Boston Edison—246,866 sh (to be offered commonholders on 1-for-10 basis)	.....	.....	.....

Notes—* Sufficient number of common shares to yield $6 million. ** Blyth & Co, underwriter.

Burndy to Offer New Connectors

E. E. DeMarsh, (seated left) vice president, sales, Burndy Engineering Co, Inc, demonstrates a sample unit of the company's comprehensive new line of compression connectors for aluminum and copper overhead distribution conductors soon to be announced. Onlookers are (left to right) H. H. Harrington, Cleveland sales representative, S. D. Bergman, chief sales engineer, and V. J. Brown, Buffalo sales representative.

Burndy's new line comprises crimp-type splices and taps as well as matched installation tools. It is designed with special attention to solving mixed-conductor problems. The Norwalk, Conn., company expects to send a mobile demonstration unit on a two-year tour of the country to show the new line to utility overhead engineers and line crews.

Brown Boveri Corp Gets Contract for AEC Units

The Atomic Energy Commission has given a $3,553,000 contract for 156 circuit breakers for the Portsmouth atomic plant, Pike County, Ohio, to Brown Boveri Corp, Switzerland.

Under the Buy American Act of 1933 foreign bids on government contracts are required to be more than 25% lower than any domestic bids. The Swiss firm's bid was nearly 30% below its nearest competitor. Westinghouse Electric Corp submitted a bid of $4,998,000 and General Electric Co, $5,892,000.

Brown Boveri, which has offices in New York, plans to subcontract in the U. S. for roughly $2-million worth of the equipment under the contract. The firm has guaranteed maintenance of its equipment by its factory representatives here.

Federal Electric Products Purchases Pacific Electric

Purchase of Pacific Electric Manufacturing Corp, San Francisco, by Federal Electric Products Co, Newark, N. J., has been announced by T. M. Cole, president of Federal Electric, and J. S. Thompson, president of Pacific Electric.

Federal Electric, which manufactures circuit breakers and switchgear, has acquired for $4.5 million about 98% of the common stock of Pacific Electric. This was financed by Federal Electric's recent $6,379,000 security offering. The Newark firm offered for private sale $3 million of its first mortgage 5% bonds due 1965 to certain investors to net the company $2,970,000. The public was offered through H. M. Byllesby & Co-Hayden, Stone & Co group $2 million 6% subordinated income debentures due 1968 to net Federal Electric $1,870,000, and 220,000 common stock shares at $7.00 to net $1,364,000. Another offer consisted of private sale of 100,000 common stock shares to net $175,000.

Pacific Electric management, under Thompson, will continue to operate the company's two manufacturing plants in San Francisco and Santa Clara, Calif., and the assembly plant at Gary, Ind. The company specializes and manufactures high voltage outdoor switchgear for the entire utility field.

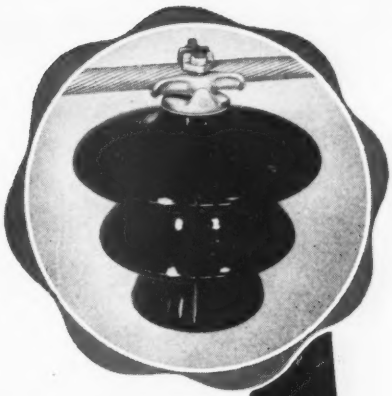
MANUFACTURING BRIEFS

Construction has been started on a new addition to the plant of Ilg Electric Ventilating Co, Chicago. The two-story structure, which will occupy an area of approximately 35,000 sq ft, will permit expansion of the engineering and general offices as well as greater factory activities. The new addition will cost approximately $500,000.

MANUFACTURERS' EARNINGS

Company	Period Months Ended		Net Income 1953	Net Income 1952	Earnings Per Common Share 1953	Earnings Per Common Share 1952
Formica	3	Mar.	$380,393	$297,302	$1.16	$ .91
McGraw Electric	3	Mar.	1,789,000	1,982,000	1.77	1.96
Philco	3	Mar.	3,401,000	2,341,000	.94	.64
Square D	3	Mar.	926,783	1,327,107	.67	.96

O-B CLAMPTOPS REPLACE TIE WIRES



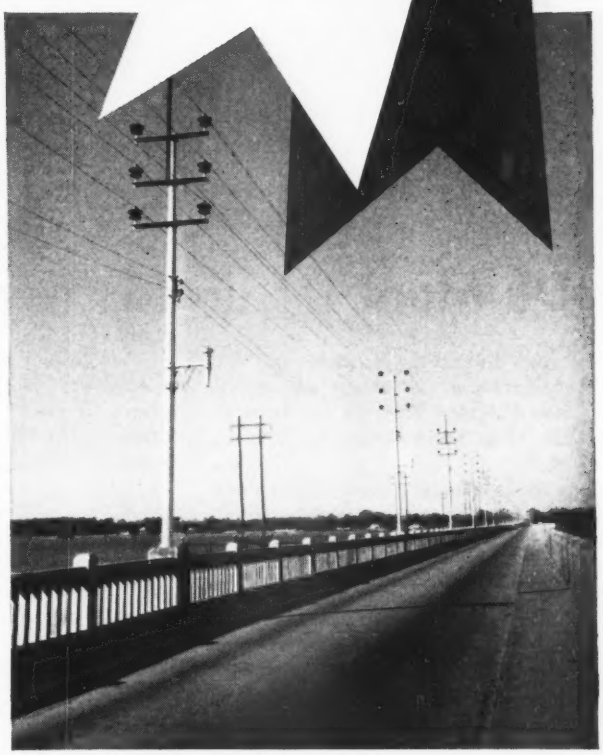
on the basis of plain merit !

Even the best tie wire won't stay tight indefinitely. Unbalanced spans, wind, ice loading; all tend to deterioriate a tie connection. Then comes conductor movement, chafing over the hard insulator head, strand damage, and even possible parting of the cable. Loose ties are also a common source of radio interference.

With the O-B Clamptop on your favorite insulator, either pintype or post, a permanent conductor attachment is certain. Stronger than the tightest newly-applied tie, it never relaxes its hold.

Along with this definite operating advantage goes extreme ease of installation. An inexperienced man with a common hand wrench can get a perfect job on every insulator in half the time it takes to make the simplest tie. Clamptops are a "natural" for hot-stick working.

Try the O-B Clamptop and see for yourself why it is replacing the tie wire--on the basis of plain merit!



Bordering open waters of the Gulf, this line is exposed to the full force of hurricanes. Clamptop insulators have contributed to a record of no windstorm outages.

Loosened tie wire, caused by unbalanced span, permitted conductor movement that "sawed" ¼-inch into the porcelain head of this insulator before cable failure occurred.

Ohio Brass

MANSFIELD OHIO, U.S.A.

IN CANADA: CANADIAN OHIO BRASS CO., LTD., NIAGARA FALLS, ONT.

4391-H

Du Mont technicians make final checks on high-speed moving-film cameras used to make photographic recordings of patterns appearing on face of cathode-ray oscillograph. Test area is in new Instrument Division plant of Allen B. Du Mont Laboratories, Inc, Clifton, N. J.

Du Mont Dedicates New Plant

A 118,000-sq ft plant for the production of cathode-ray instruments was dedicated May 12 by Allen B. Du Mont Laboratories, Inc, Clifton, N. J.

This new, one-story 525-ft long building, which is adjacent to the company's cathode-ray tube plant, is reported to be the largest in the world devoted exclusively to the manufacture of cathode-ray instruments for industrial, defense, and scientific applications.

For the field of cathode-ray instrumentation, the new Du Mont facility will manufacture oscillographs and special instruments, such as spectographs, certain television receivers, Radar, Loran, and Shoran equipment.

Devices Demonstrated . . . As part of the dedication, Du Mont exhibited cathode-ray oscillographs to demonstrate practical uses of the devices, which are often termed "scopes." Among the exhibits were:

1. Surge testing oscillograph—to test high-voltage transformers, and circuit breakers for breakdown.

2. Voice observer—to transform the pitch and loudness of the voice into electrical signals visible on the cathode-ray tube screen.

3. Fluorescent light oscillation instrument—to trace by two different pictures of the voltage around a fluorescent light bulb due to the excitation of gas molecules.

4. Spectrophotometer—to detect variations in color by the respective characteristic curves.

5. Tube characteristics plotter—to trace mathematical vacuum tube curves, showing the three axes representing plate current, plate voltages, and grid current.

6. Hardness tester—to test seemingly identical heat-treated steel specimens.

Designed for "straight-through" operating and production flow, the new plant will employ about 370 employees, including about 100 in the engineering department.

MEETINGS CALENDAR

National Association of Purchasing Agents
Annual Meeting, Statler Hotel, Los Angeles, May 24-27.

National Association of Electrical Distributors
45th Annual Convention, Conrad Hilton Hotel, Chicago, May 24-29; Spring Meeting, Pacific Zone, Huntington Hotel, Pasadena, Calif., June 8-10; Fall Meeting, Pacific Zone, Hotel del Coronado, Coronado, Calif., Oct. 11-14.

Illuminating Engineering Society
Great Lakes Regional Conference, Syracuse Hotel, Syracuse, N. Y., May 25-26; National Technical Conference, Hotel Commodore, New York, Sept. 13-17.

Edison Electric Institute
Meter-Service Committee, Wentworth-by-the-Sea, Portsmouth, N. H., May 25-27; 21st Annual Convention, Convention Hall, Atlantic City, N. J., June 1-4; Hydraulic Power Committee, Multnomah Hotel, Portland, Ore., June 15-16.

American Institute of Electrical Engineers
Conference on Electric Heating sponsored by Committee on Electric Heating and Michigan Section, AIEE, Detroit-Leland Hotel, Detroit, May 26-27; Summer General Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 15-19; Pacific General Meeting, Hotel Vancouver, Vancouver, B. C., Sept. 1-4; Middle-Eastern District Meeting, Daniel Boone Hotel, Charleston, W. Va., Sept. 29-Oct. 1; Fall General Meeting, Muehlebach Hotel, Kansas City, Mo., Nov. 2-6.

Pennsylvania Electric Association
Prime Movers Committee, Beachcombers Resort Hotel, Erie, Pa., May 28-29.

***Public Information Program**
Steering Committee, Hotel Traymore, Atlantic City, N. J., June 1; Mid-Atlantic Region, Safe Harbor, Pa., June 16; Workshop Conference Committee, Blackstone Hotel, Chicago, June 23; Steering Committee, Edgewater Beach Hotel, Chicago, Oct. 21; Workshop Conference, Edgewater Beach Hotel, Chicago, Oct. 22-23.

California Municipal Utilities Association
Annual Conference, Clift Hotel, San Francisco, June 9-12.

New England Meter Engineers
General Electric Co's Meter Plant, West Lynn, Mass., June 12.

Wisconsin Utilities Association
Accounting Section Convention, Schwartz Hotel, Elkhart Lake, Wis., June 21-23; Sales-Service Section Convention, Schroeder Hotel, Milwaukee, Nov. 11-13.

Michigan Electric Association
Annual Meeting, Mackinac Island, Mich., June 21-24.

Canadian Electrical Association
Annual Convention, Manoir Richelieu, Murray Bay, Que., June 25-27.

American Society of Mechanical Engineers
Semi-Annual Meeting, Statler Hotel, Los Angeles, June 28-July 2; Fall Meeting, Sheraton Hotel, Rochester, N. Y., Oct. 5-7; Annual Meeting, Statler Hotel, New York, Nov. 29-Dec. 4.

***Electrical Equipment Representatives Association**
Summer Meeting, Hotel Colorado, Glenwood Springs, Colo., July 15-17.

International Association of Electrical Leagues
18th Annual Meeting, Fairmount Hotel, San Francisco, Aug. 5-8.

Maryland Utilities Association
Fall Conference, Cavalier Hotel, Virginia Beach, Va., Sept. 18-19.

Rocky Mountain Electrical League
50th Annual Fall Convention, Broadmoor Hotel, Colorado Springs, Colo., Sept. 20-23.

International Association of Electrical Inspectors
Silver Jubilee Meeting, Edgewater Beach Hotel, Chicago, Sept. 21-26.

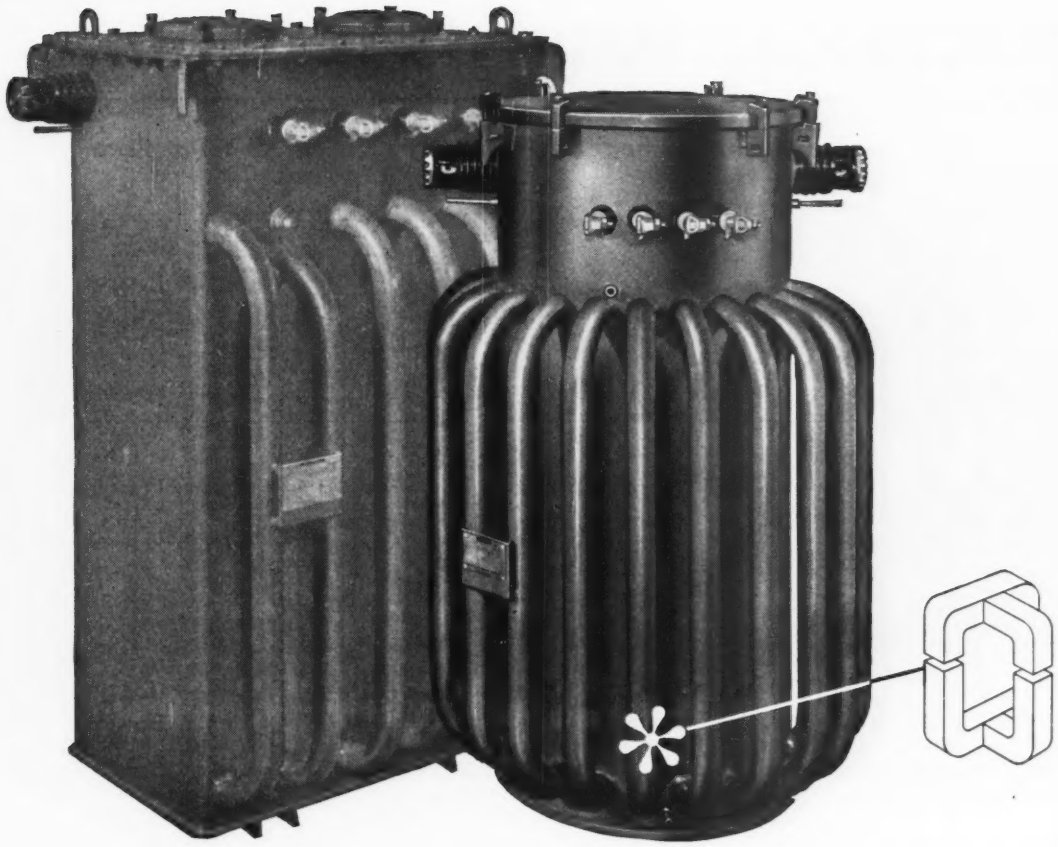
Interstate Power Club
Hotel Martinique, New York, Oct. 5; Hotel Martinique, New York, Dec. 7.

Electric League of Western Pennsylvania
4th Industrial Electric Exposition, William Penn Hotel, Pittsburgh, Oct. 6-8.

Southeastern Electric Exchange
General Sales Conference, Atlanta Biltmore Hotel, Atlanta, Ga., Nov. 4-6.

National Electrical Manufacturers Association
Annual Meeting, Haddon Hall, Atlantic City, N. J., Nov. 9-12.

*Addition this week.



New "TC" Core

permits 20% average weight reduction in 3-phase distribution transformers

If load growth indicates the need for a new or expanded 3-phase system . . . with correspondingly higher rated transformers . . . here's good news. Weight of Westinghouse 3-phase distribution transformers has been drastically reduced. In most cases, the original pole will support these new units, and they're easier to hang, easier to store as well. Primary reason: A new Hipersil® Core. Tests show that the new Type "TC" Core maintains excellent performance characteristics in a much more compact core-coil assembly.

For example, the new 75-kva conventional unit weighs only 1300 pounds, fits into a round tank 22″ in diameter. This contrasts with the superseded model at 1730 pounds in a rectangular tank, 18″ x 27″.

An even greater saving in size and weight of 3-phase "CSP®" (Completely Self-Protecting) units is achieved through the use of new, smaller LR circuit breakers.

Consider, as well, the advantages Westinghouse offers in "Coastal Finish", wall-mounted bushings with unbreakable "Enrup®" knobs, and inhibited oil. Call your Westinghouse representative for complete information, or write direct to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

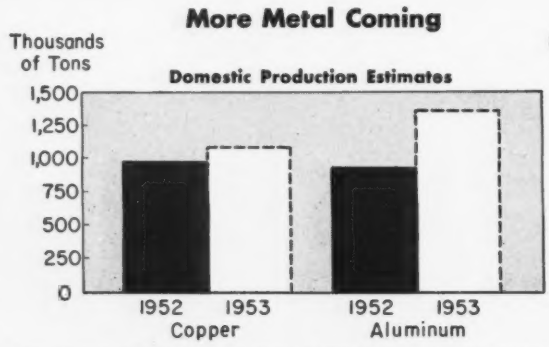
***Type "TC" Hipersil Cores.** All the superior magnetic characteristics of Hipersil "C" Cores are retained with a T-leg added to accommodate 3-phase coils.

J-70675

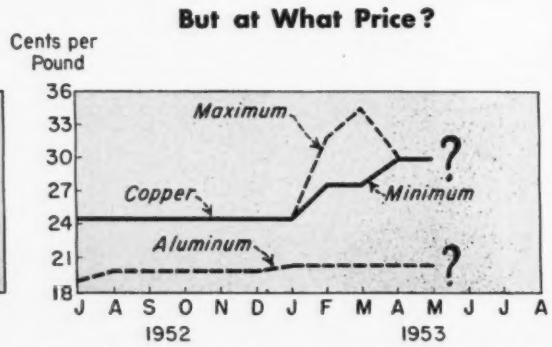
YOU CAN BE **SURE**... IF IT'S

Westinghouse

ELECTRICAL BUSINESS OUTLOOK



Source: Bureau of Mines; American Bureau of Metal Statistics; 1952 Estimates by McGraw-Hill, Dept. of Economics



Source: Typical Domestic Prices from E&MJ Metals and Mineral Markets; McGraw-Hill, Dept. of Economics

It's Easier to Get Copper, Aluminum

Utilities will soon find it easier to get products made of copper and aluminum. And they may be cheaper. Supplies of both metals are improving. And in the case of copper the price may be slipping.

These are the last of the major non-ferrous metals to stay tight in price and supply. Lead and zinc prices dropped sharply last year, and heavy imports of cheap metal from abroad are still keeping prices far below the old ceiling levels. Meanwhile, demand for aluminum and copper has more than matched the supply available.

Now supplies of copper and aluminum are improving (chart). Demand may drop later this year. It's not likely that this will lead to drastic price declines like those in lead and zinc. But copper and aluminum are no longer the major problems they have been for the past three years.

Copper Price May Go Even Lower . . . Copper is just settling down after the post decontrol jump in prices. Domestic metal cost around 30¢ a lb in late April and early May, after ranging between 27½ and about 34½¢ for a couple of months while producers tried to discover what price was "right" for the market. Even 30¢ may be a little high. Several factors are likely to move the price down in the next few months:

1. More domestic copper is available. Scrap started moving after its price was decontrolled last winter. Before that it was largely in hiding, waiting for a higher price. In addition, mine and smelter output of domestic copper is moving up and may be about 10% higher than last year when production actually declined.

2. Imports will be higher. More copper is being produced abroad, and demand abroad has been slipping. So more and more copper will be available for import—and at prices equal to or lower than the domestic price. Until recently all foreign copper cost more than domestic. Today, only the Chileans are holding out for a substantially higher price, and they probably can't get it much longer.

3. Demand will drop in the U.S. if the level of business falls off. It's entirely likely that industrial production will decline after mid-year (EBO, April 27). And the big drop may come in important copper-consuming industries.

4. The London metal market will start free dealing in copper on Aug. 5. It was the free London market consistently running lower than the American price level that helped depress lead and zinc prices. Free markets will probably have a less drastic effect on copper. It's not in great oversupply the way lead and zinc are. But London is likely to funnel enough cheaper metal to the United States to push down the U. S. price.

Brass and wire mill products may drop in price even before these other factors take hold. They are based on a copper price of 32.6¢—assuming a combination of domestic metal at 30¢ and foreign at 36½¢. But foreign copper is now available for 30¢. Some mill is likely to break the pattern and cut its price to a basis of 30¢ for copper.

Aluminum Supply Is Increasing . . . Supply—not price—is the problem with aluminum. And it looks now as if supply will improve rapidly. Production passed the October, 1943, record in March. Of course, demand for aluminum is growing too—both civilian demand and requirements for military aircraft. But civilians should get metal more easily in the second half of this year.

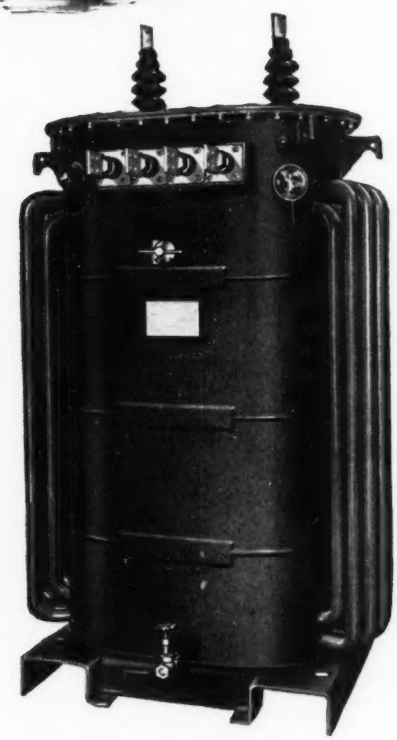
But there probably won't be much of a price rise—if any—because of expanding capacity. It will reach about 1.7 million tons in late 1954, compared to actual production of just 719,000 tons in 1950. Present price is 20½¢ a lb up only 1½¢ since 1951.

choose

MOLONEY ELECTRIC

167 kva to 500 kva Distribution Transformers

because –



They are designed and built to withstand severe operating conditions and excessive load demands efficiently and without interrupting service. This is true because Moloney incorporates these superior design features in all of its products.

1. Higher factor of safety

Liberal use of insulating materials and coil cooling ducts makes possible greater performance dependability under overload conditions for a longer time. Greater mechanical strength permits them to withstand severe overload conditions without damage or mechanical distortion.

2. Improved short-time overload capacity

Distribution transformers, during peak load periods, may carry loads greatly in excess of rated capacity. The lower winding temperature gradient of Moloney Transformers makes it possible for them to carry severe overloads without seriously affecting their operating life.

3. Surge-proved core-and-coil design

All Moloney transformers are of surge-proved core-and-coil design tested on our 3,600,000 volt surge generator. Periodic surge-testing of standard designs assures continuous quality control. With Moloney Distribution Transformers you are sure of high resistance to the effects of lightning surges.

MEEE-29

Illustrated at left: Moloney Distribution Transformer rated 500 Kva, single-phase, 60 cycles, high voltage 7200 volts, low voltage 240x480 volts.

MOLONEY ELECTRIC COMPANY

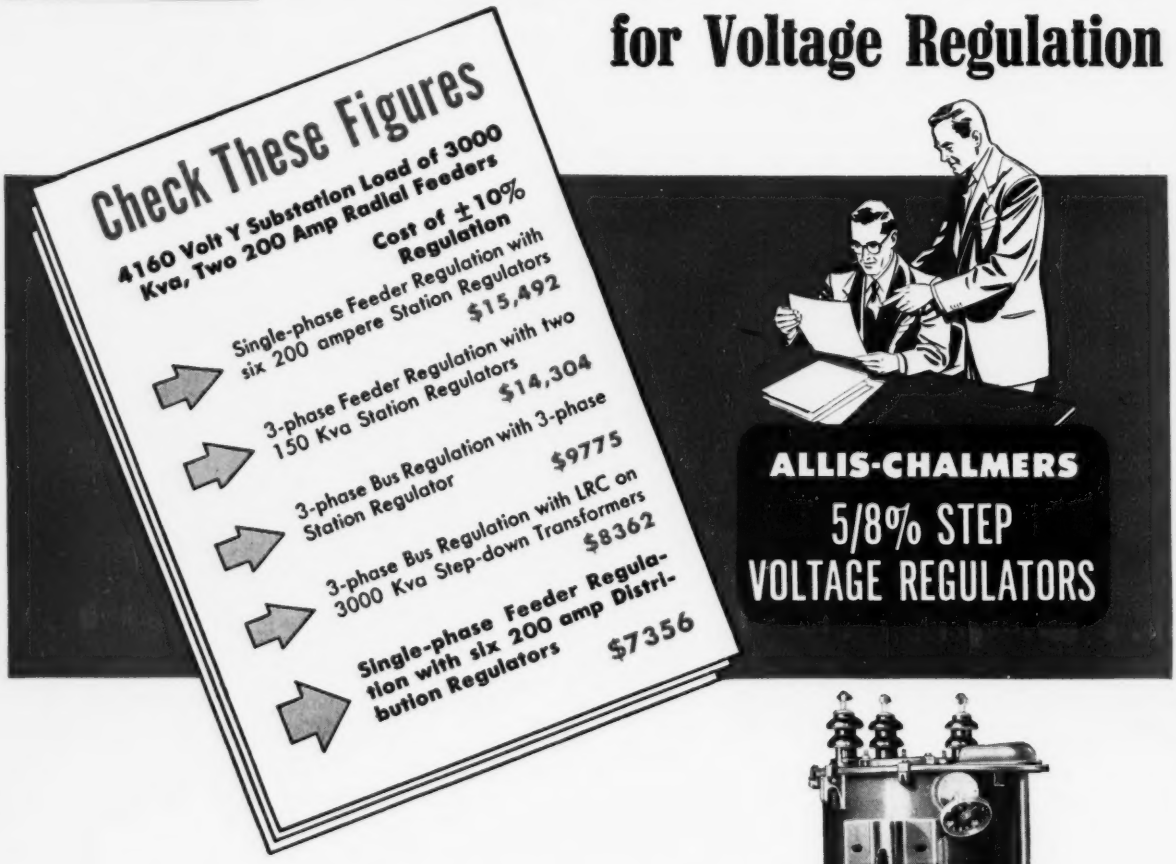
Manufacturers of Power Transformers • Distribution Transformers • Load Ratio Control Transformers Step Voltage Regulators • Unit Substations

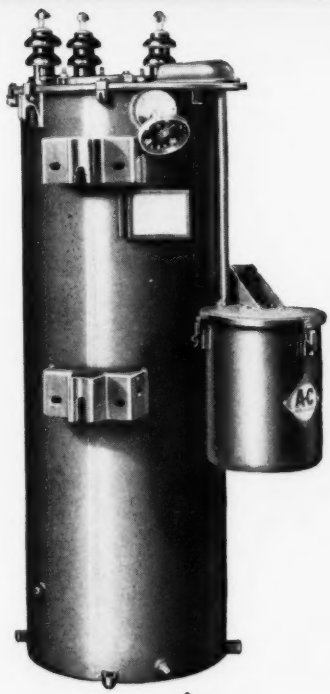
MOLONEY ELECTRIC = BETTER PERFORMANCE / GREATER RELIABILITY / LESS MAINTENANCE

SALES OFFICES IN ALL PRINCIPAL CITIES • FACTORIES AT ST. LOUIS, MO. AND TORONTO, ONT., CANADA

NOW... Lower Costs

for Voltage Regulation


Check These Figures
4160 Volt Y Substation Load of 3000 Kva, Two 200 Amp Radial Feeders
Cost of ±10% Regulation
Single-phase Feeder Regulation with six 200 ampere Station Regulators $15,492
3-phase Feeder Regulation with two 150 Kva Station Regulators $14,304
3-phase Bus Regulation with 3-phase Station Regulator $9775
3-phase Bus Regulation with LRC on 3000 Kva Step-down Transformers $8362
Single-phase Feeder Regulation with six 200 amp Distribution Regulators $7356
ALLIS-CHALMERS
5/8% STEP
VOLTAGE REGULATORS



It will pay you to analyze the changes in system economics brought about by Allis-Chalmers distribution regulators. In many cases you'll be able to reduce the cost of present voltage regulation. In others you'll be able to bring regulation to points where it wasn't economical before.

Get Highest Quality Regulation

Best of all, at this low price you get the result of 20 years of 5/8% step development. Allis-Chalmers distribution regulators give you *all* the advantages of 5/8% step regulation — ± 1 volt band, 20% range, and a rating for nearly every voltage need. In addition, you get exclusive Allis-Chalmers advantages like "Feather-Touch" control, unit-type construction, long-life contacts, and a mechanism that can withstand five million operations — equivalent to 100 years of operating life.

Charts Available for Cost Comparison

A set of six charts that will help analyze your voltage problems in terms of low-cost, reliable Allis-Chalmers distribution regulators is available. Call your nearby Allis-Chalmers district office or write Allis-Chalmers, Milwaukee 1, Wisconsin, for more information. A-4042

ALLIS-CHALMERS

Originators of 5/8% Step Regulation